[JMR: On these pages there is a description of every individual whom Jenness measured. The list not only includes the Copper Eskimos, but it also includes individuals from the Hudson Bay Eskimos, Mackenzie River Eskimos and the Alaskan Eskimos. The measurements taken are stature, head length, head breadth, head circumference, total face length, upper face length, face breadth, nose height, nose breadth, nose depth, jaw breadth, cephalic index, facial index, and nasal index. The measurements were made on both males and females.]

7: Jenness--38-89 (1914-1916) 1923 Copper Eskimo
141

[JMR: In section II of this book there is a general description of the Copper Eskimo with tables of measurements. There is also some comparative data with other Eskimo groups. Finally there are photographs of Copper Eskimo individuals.]

7: Jenness--B41 (1914-16) 1923 Copper Eskimo
116, 141

"The forehead is generally rather narrow but moderately high. It often recedes a little, but not more than in Europeans. The women (and children) as usual have somewhat straighter foreheads than the men. The lists of Section I furnish the following table of percentages.

FOREHEAD

	Height			Slope		
	Low	Medium	High		None	Slight
	p. c.	p. c.	p. c.	cases	p. c.	p. c.
Men, 77 cases.....	34	62	4	82	52	48
Women, 41 cases.....	12	85	3	42	64	36

7: Jenness--B43-44B (1914-16) 1923 Copper Eskimo
116, 141

"The bridge of the nose, besides being very depressed, is usually rather narrow. For this reason many of the Eskimos found it difficult to adjust our binoculars to their use, the space between their eyes being narrower than the distance between the lenses. Section I yields the following table of percentages.

HEIGHT OF BRIDGE

	Low	Medium	High
	p. c.	p. c.	p. c.
Men, 79 cases	82	17	1
Women, 37 cases	95	5	--

BREADTH OF BRIDGE

	Narrow	Medium	Wide
	p. c.	p. c.	p. c.
Men, 44 cases	68	18	14
Women, 13 cases	38.5	38.5	23

From the bridge the nose usually runs straight to the tip, but occasionally the line forms a concave curve or a small hump mars its regularity. The tip itself is usually moderately high and inclined to be rather broad. Both snub and hooked noses are to be seen, though neither form is very common. The flat appearance of the face so often mentioned by writers as characteristic of the [44B] Eskimos is as much dependent on the shape and height of the nose as on the prominence of the cheekbones. A broad, low nose makes the face seem flat; conversely a nose that runs straight with a slight hump to a high, narrow tip neutralizes the effect of the broad, high cheekbones and narrow forehead and makes the face seem longer, even somewhat Indian in type. Collinson remarked aquiline noses and a Jewish cast of countenance among the Eskimos of Walker bay on Victoria island, but says that it was not apparent among the natives of Cambridge bay in Dease strait;....yet the Cambridge bay natives travel freely all over Coronation gulf, and it was among the gulf natives that I myself particularly remarked its presence. Aquiline noses, indeed, seem to occur in all Eskimo tribes; Rasmussen noticed this feature at Cape York in northern Greenland and Murdoch at Point Barrow in Alaska...."

7: Jenness--44B (1914-16) 1923 Copper Eskimo
116, 141

"The lips are usually rather full. Eversion, not frequent in the upper lip, is the rule in the lower, which is also somewhat thicker than the upper. The protrusion of the lips frequently gives an unreal semblance of recession to the chin, which is nearly always straight.

EVERSION OF LIPS

	Upper		Lower	
	None	Slight	None	Slight or considerable
	p.c.	p.c.	p.c.	p.c.
Men, 82 cases	73	27	29	71
Women, 42 cases	69	31	26	74

THICKNESS OF LIPS

	Upper			Lower		
	Thin	Medium	Thick	Thin	Medium	Thick
	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.
Men, 82 cases.....	1.5	68	30.5	1.5	48.5	50
Women, 42 cases.....	2.0	86	12	2.0	64.5	33.5

7: Jenness--B47-48B (1914-16) 1923 Copper Eskimo
116, 141

"The comparative material available for this purpose [AW: i.e. the purpose of discovering possible Indian admixture in the Copper Eskimo.] is rather limited. From the west we have Boas' figures for the statures and cephalic indices of the Eskimos of Alaska as a whole, Ray's measurements of the statures and weights of 51 men and 30 women of Point Barrow, and Stone's head and trunk measurements of 11 men and 5 women from the Noatak river region. The last traveller has also measured 12 men and 6 women in the Mackenzie delta. Farther east, from Hudson bay, we have Parry's figures for the statures of 20 men and 20 women of Iglulik, various measurements from 35 men on Southampton island recorded by Tocher, and the statures and weights of 9 Aivilik men and 12 Aivilik women given by Boas. Labrador is represented by the measurements of 11 men and 10 women recorded by Duckworth and Pain and the statures of 26 men and women given by Boas. In Greenland there are Steensby's measurements of 8 men and 10 women in Smith sound, while from south-west and east Greenland we have the rather extensive information published by Søren Hansen. [48B]

Less than half of these observations were made on Eskimos who had been immune from European influence. Hansen has already pointed out that this influence is likely to have caused some modification in the physical type, especially in the stature. It will be advisable, therefore, to make some distinction between the various groups, on the basis of our historical knowledge.

7: Jenness--B47-48B (1914-16) 1923 Copper Eskimo-2
116, 141

A. Eskimos virtually untouched by foreign influences, and presumably of pure stock.
   1. Ammassalik Eskimos, East Greenland.
   2. Smith Sound Eskimos measured by Steensby.
   3. Iglulik Eskimos measured by Parry.
   4. Copper Eskimos.
   5. Point Barrow Eskimos measured by Ray.

B. Eskimos modified by European influence.
   1. Hudson bay Eskimos.
   2. Labrador Eskimos.
   3. Greenland Eskimos, except those of Ammassalik.

C. Eskimos probably modified by both Indian and European influences:
   1. Noatak river Eskimos.
   2. Point Hope Eskimos.

3. Mackenzie river Eskimos (1)."

"1. The old coastal inhabitants of northern Alaska and the Mackenzie delta largely disappeared during the last years of the 19th century through the ravages of European diseases. Their places have been taken by natives from inland, those dwelling on the Noatak and Colville rivers going to Point Hope, Barrow and Point Barrow, while the more eastern inlanders drifted out to the Mackenzie delta. At the present time the old and the new coast populations are inseparably mixed, and I am inclined to believe that even Stone's data from the Mackenzie delta may reflect this immigrant inland element."

7: Jenness--48B-B49 (1914-16) 1923 Copper Eskimo
116, 141

"Before taking the measurements one by one and examining the variations of their means among the Eskimos of different regions it will be advisable to examine the means themselves among the Copper Eskimos and see to what extent they differ for different age-classes. It should be remembered that the Copper Eskimos had no idea of their ages, so that the age-classes given below are only approximately accurate; but no man there was judged to be under 20 years of age, and no woman under 18. The figures in brackets give the number of individuals in each class.

It is perhaps unsafe to commit oneself to any conclusions when the number of individuals in each class is so small, but two points seem worth noticing. First, that in no age-class does the mean depart very widely from the total mean, so [B49] that the latter must be considered as tolerably accurate. The second point is that in the case of the men the means for the first two age-classes, i. e. for men up to 30 years of age, are with hardly an exception slightly below the total means. The means in the first age-class are invariably below for both sexes with the single exception of the men's stature, which may simply be due to a few abnormally tall individuals. This seems to indicate that women attain their full development shortly before 25 years, and men shortly before 30, a conclusion that Hansen also reached, though rather hesitatingly, from his

examination of the statures of the East Greenland Eskimos (1). If this is the case one would naturally suppose that more reliable means could be obtained by restricting observations to individuals above those years; but this would hardly be true, since the Eskimo population in any single area is so limited that the number of subjects available would be greatly reduced and the possibility of error proportionately increased."

"1. Meddelelser om Grønland, Vol. XXXIX, p. 157. That the development of the body, however much retarded by climatic and food conditions, should not be complete at the age of 25 years is so remarkable that it is very doubtful whether the table can be trusted on this point."

7: Jenness--B49 (1914-16) 1923 Copper Eskimo
116, 141

[JMR: Stature]

	Male	Female
Number of cases	82	42
Low	1506mm	1403mm
High	1743mm	1660mm
Mean	1648mm	1564mm
Standard deviation	±55	±52
Probable error of mean	±4.0	±5.4
Probable error of St. Dev.	±2.9	±3.8
Coefficient of variation	3.3	3.3

7: Jenness--B53-54B (1914-16) 1923 Copper Eskimo
116, 141

[JMR: Cephalic Measurements]

	Head Length		Head Breadth	
	Male	Female	Male	Female
Number of cases	82	42	82	42
Low	182mm	178mm	140mm	138mm
High	214mm	203mm	163mm	151mm
Mean	195.9mm	190.0mm	151.8mm	145.8mm
Standard deviation (+ or -)	5.9	5.8	4.1	3.0
Probable error of mean "	0.44	0.60	0.30	0.31
Probable error of St. Dev. "	0.31	0.43	0.21	0.22
Coefficient of variation "	3.0	3.0	3.0	3.0

7: Jenness--54B (1914-16) 1923 Copper Eskimo
116, 141

[JMR: C[redacted]nalic Index]

		Male	Female
Number of cases.		82	42
Low		70	71
High		84	81
Mean		77.6	76.7
Standard deviation	(+ or -)	2.6	2.4
Probable error of mean	"	0.19	0.25
Probable error of St. Dev.	"	0.13	0.17
Coefficient of variation	"	3.3	3.3

7: Jenness--B55-56B (1914-16) 1923 Copper Eskimo
116, 141

"The correlation that seemed to exist between variation in stature and European influence plainly does not hold for the cephalic measurements, a circumstance that Hansen has already remarked in the case of his Greenland data. It is different where Indian influences have been at work. The Point Hope and Noatak river natives differ from all other Eskimos and approach the neighbouring Indians not only in stature, but also in head form, showing a marked tendency towards brachycephaly.... The greater roundness of the head here seems to be due to an increase in its breadth rather than a decrease in its length. In Coronation gulf the head is slightly longer and broader than usual, although the [56B] proportion remains about the same as in NE. Greenland and Hudson Bay. The great size of the head in Coronation gulf comes out in the figures for the horizontal circumference, which average 581 mm. for men and 571 mm. for women ...."

7: Jenness--56B (1914-16) 1923 Copper Eskimo
116, 141

"Hansen, unfortunately, has not separated his data from NE. and SE. Greenland so that graphs can be constructed for each region, but from his table of the range of indices in both places and for both sexes combined I have plotted a graph to place alongside that given by the Copper Eskimo figures. The two polygons are evidently very much alike, but the Coronation gulf group has not the tendency towards dolichocephaly that is displayed by the East Greenland group, a tendency that,to judge from the means quoted above, is more marked in the SE. than in the NE. Greenlanders.

These graphs again raise the question as to whether there is not a slight admixture of Indian blood among the Copper Eskimos, making the head more pronouncedly mesaticephalic as well as increasing the stature. . . . On the whole I am inclined to favour this assumption, especially in view of the fact that few individuals (see Section I, Males 12, 18, 37 and 57) seemed to resemble Indians in cast of feature. This admixture must have been very slight, however, since it has failed to produce any wide departure from the pure Eskimo type as found to the eastward; and altogether the evidence is so scanty that I hesitate to lay any stress upon it."

7: Jenness--B57 (1914-1916) 1923 Copper Eskimo
116, 141

"In regard to sexual differences the cephalic indices of the women seem to be everywhere slightly lower than those of the men, the difference varying from about 1 to 2.5."

7: Jenness--58B-B59 (1914-16) 1923 Copper Eskimo
116, 141

[JMR: Face Measurements]

	Total Face Length		Upper Face Length	
	Male	Female	Male	Female
Number of cases.	82	42	82	42
Low	109mm	106mm	64mm	64mm
High	141mm	137mm	82mm	82mm
Mean	126.9mm	121.7mm	74.9mm	71.5mm
Standard deviation	±6.4	± 5.6	±3.8	±3.8
Probable error of mean	±0.47	±0.58	±0.28	±0.39
Probable error of St. Dev.	±0.33	±0.41	±0.20	±0.28
Coefficient of variation	5.0	4.6	5.0	5.3

7: Jenness--B59-60B (1914-16) 1923 Copper Eskimo
116, 141

[JMR: Face Breadth]

	Male	Female
Number of cases	82	42
Low	129	132
High	157	144
Mean	145.7	137.8
Standard deviation	±5.4	±2.9
Probable error of mean	±0.40	±0.30
Probable error of St. Dev.	±0.28	±0.21
Coefficient of variation	3.7	2.1

7: Jenness--60B (1914-16) 1923 Copper Eskimo
116, 141

"At all events there is no indication that the Copper Eskimos have exceptionally narrow faces, so that the somewhat low value of the $\frac{\text{head breadth}}{\text{face breadth}}$ index which we shall find among them later must be ascribed solely to their broadness of head, a feature that has been noticed already."

7: Jenness--60B (1914-16) 1923 Copper Eskimo
116, 141

"The table suggests that the breadth of the face is more variable in men than in women. This sexual difference is not noticeable in any of the other measurements, nor would it naturally be expected in this one. It is worth remarking that the breadth of the face in both sexes is less variable than its length. Thus for men the coefficient of variation in face breadth is 3.7, whereas the same coefficient in the upper face length is 5.0. In women the difference is greater still, 2.1 as opposed to 5.3. There must be some reason for the length of the face being the more variable quantity, but I am unable to suggest one myself.

The Copper Eskimos have slightly broader faces than the Eskimos of Labrador, but not so broad as the Smith sound, Mackenzie delta, or Noatak river Eskimos."

7: Jenness--B61 (1914-16) 1923 Copper Eskimo
116, 141

"PROPORTION OF BREADTH OF HEAD AND BREADTH OF FACE

This proportion is of some interest because it has been used by Mr. Stefansson to support his theory of European infusion among the Copper Eskimos. . . . He relied upon Boas' statement, ... that the fundamental feature of the Eskimo skull consists in great breadth of face as compared to narrowness of skull, and the head is everywhere narrower than the face except in Labrador and West Greenland, where there is a strong infusion of white blood. The theory has been criticized already by Hawkes, who points out that there appears to be a slight sexual difference, the face in female skulls being, if anything, slightly narrower than the head. . . . Information on the subject is scarce, as very few anthropologists have made use of this index. Moreover, the question has been greatly confused by comparing measurements taken on the living with skull measurements, although the index given by the former seems to be several points lower than the corresponding skull index. Thus, in Smith sound, a place free from European admixture as far as adult Eskimos are concerned, Steensby's measurements of 18 natives give a combined index of 97 (8 men 96. 7, 10 women 97. 6) although 85 skulls from the same region measured by Bessels give an index of 103. . . . Eskimo skulls from other places closely resemble those from Smith sound, and as their indices never greatly exceed 100 we may be sure that the indices of the living Eskimos fall normally below that

7: Jenness--B61 (1914-16) 1923 Copper Eskimo
116, 141

[JMR: Facial Index]

		Male	Female
Number of cases		82	42
Low		44	47
High		61	59
Mean		51.4	51.9
Standard Deviation	(Plus or minus)	3.1	2.7
Probable error of mean	" " "	0.23	0.28
Probable error of St. Dev.	" " "	0.16	0.20
Coefficient of variation.		6.0	5.2

figure, just as it does in Smith sound. That is to say, broader heads than faces is the rule in living Eskimos, and so cannot be interpreted as a sign of European admixture."

7: Jenness--62B (1914-16) 1923 Copper Eskimo
116, 141

[JMR: head breadth / face breadth index]

		Male	Female
Number of cases		82	42
Low		87	89
High		106	99
Mean		96.0	94.6
Standard deviation	(Plus or minus)	3.2	2.0
Probable error of mean	" " "	0.23	0.20
Probable error of St. Dev.	" " "	0.16	0.14
Coefficient of variation		3.3	2.1

7: Jenness--62B-B63 (1914-16) 1923 Copper Eskimo
116, 141

[JMR: Jaw Breadth]

	Male	Female
Number of cases	82	42
Low	100	99
High	129	120
Mean	115.8	110.3
Standard deviation	±5.8	±5.6
Probable error of mean	±0.43	±0.58
Probable error of standard deviation	±0.30	±0.41
Coefficient of variation	5.0	5.0

7: Jenness--B63 (1914-16) 1923 Copper Eskimo
116, 141

[JMR: Gonio-Zygomatic Index]

	Male	Female
Number of cases	82	42
Low	66	71
High	89	86
Mean	79.4	80.1
Standard deviation	±4.0	±3.9
Probable error of mean	±0.29	±0.40
Probable error of St. Dev.	±0.21	±0.28
Coefficient of variation	5.0	4.8

7: Jenness--64B (1914-16) 1923 Copper Eskimo
116, 141

"The lack of exactness in nasal measurements of the living, and the wide diversity in the shape and size of the nose among the Eskimos even of a single area, destroy much of the value of any data that may be obtained on this subject. The least satisfactory measurement of all is the nasal depth, which is consequently omitted altogether from this discussion. The tables of frequencies for the nasal height and the nasal breadth, together with the nasal index, are given below."

7: Jenness--64B (1914-16) 1923 Copper Eskimo
116, 141

[JMR: Nasal Measurements]

	Nasal Height		Nasal Breadth	
	Male	Female	Male	Female
Number of cases	82	42	82	42
Low	43mm	45mm	30mm	30mm
High	69mm	61mm	43mm	41mm
Mean	55.7mm	52.2mm	37.0mm	34.4mm
Standard deviation	±4.1	±3.3	±2.9	±2.5
Probable error of mean	±0.30	±0.34	±0.21	±0.26
Probable error of St. Dev.	±0.21	±0.24	±0.15	±0.18
Coefficient of variation	7.3	6.3	7.8	7.3

7: Jenness--B65 (1914-16) 1923 Copper Eskimo
116, 141

[JMR: Nasal Index]

	Male	Female
Number of cases	82	42
Low	50	56
High	94	80
Mean	66.8	66.1
Standard deviation	±6.5	±5.3
Probable error of mean	±0.48	±0.55
Probable error of St. Dev.	±0.34	±0.39
Coefficient of variation	9.7	8.0

9: Seltzer--317 (no date) 1933 Copper Eskimo
116, 141

"THE DATA

Vilhjalmur Stefansson made three polar expeditions. He made his first trip as ethnologist of the Leffingwell-Mikkelsen Arctic Expedition 1906-07, (3) the second in

3. Stefansson, 1922.

1908-12 as leader of the Stefansson-Anderson Expedition, (4) the third as Commander of

4. Stefansson, 1913, 1914.

the Canadian Arctic Expedition 1913-18. (5) It was during the first two trips that he was

5. Stefansson, 1921.

able to take anthropometric measurements on the various Eskimo groups he encountered. The first expedition of 1906-07 was spent mainly among the Eskimos of the Mackenzie delta, although he went as far west as the Colville; on the second visit, 1908-12, Stefansson travelled as far west as Kotzebue Sound and as far east as the Coronation Gulf."

9: Seltzer--318 (no date) 1933 Copper Eskimo
116, 141

"Measurements were taken on adult males and females (18-60 years of age) and on sub-adult males and females (3-17 years of age) as follows:

Head length (maximum glabello-occipital length)
Head breadth (maximum biparietal breadth)
Face height (mention-nasion height) (6)

6. Stefansson measured face height from glabella to menton, but a correction has been applied to make face height read from nasion to menton. For correction see Connolly, 1926.

Face breadth (maximum bizygomatic diameter)
Stature
Sitting height (sitting height to vertex)

From the above measurements the following indices were calculated:

Cephalic index (ratio of head breadth to head length)
Facial index (ratio of face height to face breadth)
Cephalo-facial index (ratio of face breadth to head breadth)
Relative sitting height (ratio of sitting height to stature)"

9: Seltzer--319-322 (no date) 1933 Copper Eskimo-1-5
116, 141

"As stated above, measurements were taken on various groups of Eskimos from Kotzebue Sound as far east as Coronation Gulf. It would be futile and profitless to attempt a survey of each tribe separately inasmuch as certain tribes obviously belong together, due to their blood affiliations and constant contact with each other. Therefore, Stefansson, on the basis of his knowledge of their relationships, has divided them into the following groups.

(1) Kotzebue Sound. Includes all those groups on the Alaskan coast from Cape Prince of Wales to and including Point Hope.

(2) Barrow. Includes all those groups along the coast north of Point Hope district to and including the region around Point Barrow.

(3) Nunatagmiut. Includes all the groups residing along the Colville Basin, as the Nunatagmiut proper, the Noatagmiut, etc.; also the Eskimos on the mid-eastern Alaskan coast near or at the delta of the Colville River.

(4) Mackenzie. Includes all tribes along the northern Canadian coast in the region of the Mackenzie delta from Herschel Island east to Cape Parry.

(5) Victoria Island. Includes the Prince Albert Sound people and the Haneragmiut on southwestern Victoria Island.

(6) Coronation Gulf. Includes all tribes living in and around Coronation Gulf.

"Kotzebue Sound Eskimos

This group consists of 30 adult males and 8 adult females who are members of tribes along Kotzebue Sound from Cape Prince of Wales to Point Hope. The following tribes are represented in this division, Kivalina, Selawik, Tapkak, Kangianik, Kittegarmiut, Kigirktaruk, Port Clarence, Cape York, and Cape Prince of Wales.

Barrow Eskimos

All the individuals in this classification belong to the tribes that reside along the Alaskan coast from Icy Cape to Point Barrow. Here [320 contains a chart] [321] were measured 85 adult males and 28 adult females. The tribes in this district are the Kugmiut, Nuvugmiut, Utkiavigmiut, Oturkagmiut, (7) etc. These people live mainly at

7. The Oturkagmiut have been included in the Barrow group because although they have some Nunatagmiut blood, those measured by Stefansson show closer affiliations with the coastal peoples.

Point Barrow, Cape Smythe, Wainwright and Smith Bay. The Oturkagmiut are considered

to live inland from Icy Cape.

Nunatagmiut Eskimos

The Nunatagmiut group contains 72 adult males and 55 adult females. This includes most of the tribes living in the Colville valley, along the Colville River and tributaries and at Colville delta. The tribes are the Nunatagmiut proper, Noatagmiut, Kuvugmiut, Kangianirmiut, Killirmiut, Kagmallirmiut. These people were measured chiefly on or near the Colville, at Barrow (Cape Smythe) and Point Barrow when they came down to the coast for the whaling season, and at Herschel Island in the east where they journeyed to meet the whaling vessels in order to obtain supplies and employment on the ships.

Mackenzie Eskimos

The Mackenzie Eskimos extend along the mouth and delta of the Mackenzie River from Herschel Island to Cape Parry. Here Stefansson measured 48 adult males and 40 adult females at Stokes Point, Baillie Islands, Kangianik, Booth Islands, Tuktuyaktok and Imnaluk belonging to the Kupugmiut, Kittegaryumiut, Kigirktagmiut, and

Avvagmiut tribes.

Victoria Island Eskimos

The Victoria Islanders in this series are those tribes that occupy the southwestern end of Victoria Island and include the Kanghiryutsiagmiut around Minto Inlet, the Kanghiryuarmiut who inhabit Prince Albert Sound, and the Haneragmiut (8) who live near

8. The Haneragmiut are know to have mixed a good deal with the Coronation Gulf Eskimos.

Cape Kendall, southeast of Ikpigyuak Cape. This group consists of 30 adult males and 19 adult females.

Coronation Gulf Eskimos

During 1910-11 Stefansson measured 65 adult males and 46 adult females affiliated with the Akuliakuttagmiut, Puiplirmiut, Noahonirmiut, [322] Pallirmiut,

9: Seltzer--319-322 (no date) 1933 Copper Eskimo-5
116, 141

Kogluktogmiut, Nagyuktogmiut, and Utkusiksaligmiut tribes. This group was studied again a few years later by Jenness whose report may be found in the reports of the Canadian Arctic Expedition 1913-18."

9: Seltzer--322 (no date) 1933 Copper Eskimo
116, 141

"TABLE I
Head Length

	No.	RANGE	S.D.	MEAN	C.V.*
Males:					
Kotzebue Sound . .	30	185-211	192.50±0.72	5.83±0.51	3.03±0.26
Barrow.	62	179-210	192.39±0.54	6.39±0.38	3.32±0.20
Nunatagmiut. . .	64	180-199	190.03±0.40	4.78±0.28	2.52±0.15
Mackenzie	47	185-212	196.26±0.56	5.71±0.40	2.91±0.20
Victoria Island . .	30	185-206	194.13±0.58	4.73±0.41	2.44±0.21
Coronation Gulf .	65	182-211	195.71±0.47	5.58±0.33	2.85±0.17
Females:					
Kotzebue Sound. .	8	183-189	185.00±0.45	1.87±0.33	1.01±0.17
Barrow	26	176-194	184.88±0.61	4.65±0.43	2.52±0.24
Nunatagmiut . . .	55	173-197	182.91±0.43	4.72±0.30	2.58±0.17
Mackenzie	40	178-198	186.90±0.60	5.58±0.42	2.99±0.23
Victoria Island. .	19	172-200	186.74±1.06	6.82±0.75	3.65±0.40
Coronation Gulf .	46	179-201	188.70±0.47	4.72±0.33	2.50±0.18

* The probable errors of the means, standard deviations and coefficients of variation, have been calculated with the aid of Pearson's tables of χ_1 χ_2. See Pearson, 1914."

9: Seltzer--322-344 (no date) 1933 Copper Eskimo -1-13
116, 141

"Table I contains the mean head lengths of the males and females of our Eskimo groups. The most striking feature among the males is the remarkable length of the heads of the Mackenzie Eskimos, who have a mean diameter of 196.26 mm. The Coronation Gulf group shows the next longest head length, while the Nunatagmiut have the shortest of all, 190.03 mm., a fact which no doubt betrays some mixture in modern and in recent prehistoric time with the Athapaskans to the south. The Kotzebue Sound and Barrow males have mean head lengths that are very similar. Another interesting point is that the more isolated and northern Victoria Islanders, who are geographically farther away from [p. 323 contains a chart] [324] possible Indian admixture show shorter mean head lengths than their southern Coronation Gulf neighbors. (9)

9. Note by Stefansson: It is chiefly on an uninterpreted map that the more northerly people seem more isolated. The reports of Hanbury, Stefansson and Jenness (taken in chronological order) show that the more northerly Victoria Islanders made frequent journeys to the Baker Lake and Chesterfield Inlet district and had opportunity of blood mixing with the southerly and southeasterly groups from Kent Peninsula to Hudson Bay. (Hanbury, David T. Sport and Travel in the Northland of Canada, p. 14. For evidence as to what Eskimos Hanbury met, see Stefansson, 1913, p. 285;

Stefansson, 1914, pp. 28, 36, 37; Stefansson, 1921, p. 419. See also Jenness, 1923, p. 48.)

Among the females, although the Mackenzie have fairly long heads, they are exceeded in this character by the Coronation Gulf women. The Victoria Islanders again have a shorter mean head length than the Coronation Gulf group. The Nunatagmiut females, as expected, exhibit the shortest mean head length of 182.91 mm., while the Barrow and Kotzebue Sound women are similar to each other as are the men.

The Mackenzie males in this feature too, differ markedly from any of the other Eskimo groups, having the narrowest mean head breadth of 146.68 mm. The mean next in size is that of the Coronation Gulfers which is 4.41 mm. wider. The Nunatagmiut again show their Athapaskan taint in having the broadest heads with a mean of 154.48 mm. The Kotzebue Sound and Barrow males are similar in head breadth as [p. 325 contains a chart] [326] in head length, while the Victoria Islanders are 0.74 mm. broader headed than the more southern Coronation Gulf men.

The females show the same general tendencies as do the males, the Mackenzie being by far the narrowest and the Nunatagmiut the broadest. The Victoria Island women follow the men in having a greater mean head breadth than the Coronation Gulf group.

In this table I have listed the mean cephalic indices of the male and female Eskimos. From the previous studies in head length and head breadth it is no surprise to find that

the Mackenzie males show the lowest mean cephalic index 74.75, this figure being 2.51 index units lower than the next highest group, the Coronation Gulfers.

The Mackenzie are the only mean dolichocephalic group of all the Eskimos, for the rest have mesocephalic indices, including the Nunatagmiut who are practically brachycephalic with an index of 81.39.

The Kotzebue Sound and Barrow males have almost identical mean indices, while that of the Victoria Islanders, although quite similar to the afore-mentioned groups, is 1.04 index units higher than the Coronation Gulf mean.

A study of the female cephalic indices substantiates the facts observed among the males. Here too the lowest cephalic index is that of the Mackenzie women. The Nunatagmiut possess the highest mean index of 81.18, bordering on brachycephaly. [327]

The Coronation Gulf mean is 1.55 units lower than that of the Victoria Island females. The 26 Barrow women have a cephalic index of 78.12 in contrast to the 77.00 mean index of the Kotzebue females. This difference may be due to the small number of individuals in the Kotzebue sample, although the standard deviation of 2.12 is fairly small.

It must not pass unnoticed that, with the exception of the Mackenzie, all the female groups have lower mean cephalic indices than the corresponding males.

Table 6 shows the grouping of all the Eskimos according to the divisions of the cephalic index. This statistical device has the advantage over the mean in that it distinguishes the various types of head form which are present in the group.

Among the males, the Kotzebue Sounders evidence a marked mesocephaly having 60.0 per cent of the individuals in this class, associated with fairly good size dolichocephalic and brachycephalic elements. The Barrow males have division percentages quite similar to those of their Kotzebue neighbors, except that they possess a larger brachycephalic class, which is doubtless due to Nunatagmiut admixture when the latter group came down to the coast in the whaling seasons. [p. 328 contains a chart] [329]

The Nunatagmiut males are composed of two types, mesocephals and brachycephals, with about equal numbers in each classification. Of the 64 Nunatagmiut males there is only one individual who lays claim to dolichocephaly.

The Mackenzie males stand apart from all of the other groups in head form, 79.2 per cent of their number showing dolichocephaly, with only 18.7 per cent mesocephalic. This indeed emphasizes the distinctiveness of the Mackenzie Eskimo, for none of our other groups can compare with them in extreme length and narrowness of the cranial vault.

The Victoria Islanders and Coronation Gulf men show similarity in the percentage of individuals in the various classes, with the latter having a slightly greater tendency towards dolichocephaly.

The female Kotzebue and Barrow Eskimos approximate the male condition, with the exception of an absence of roundheads among the former.

The Nunatagmiut women show almost identical percentages with the males; and the Mackenzie, although they do not have as many dolichocephals as the men, exceed any

of the other female groups in this characteristic.

The only marked divergence from the male results is found among the Coronation Gulf women, whose population is composed of almost equal numbers of dolichocephals and mesocephals. [p. 330 contains a chart] [331]

This table gives the mean face heights of our six Eskimo groups. The shortest average a little above 125 mm. and are found among the Mackenzie and Victoria Island males. The Barrow men have the longest faces, showing an exceptionally high mean face height of 129.63 mm. The remaining groups, the Kotzebue, Nunatagmiut and Coronation Gulfers, all have means ranging around 127 mm.

The Eskimo women do not correspond to their respective male groups in mean face height, for although the Mackenzie females exhibit the shortest faces of all, the Victoria Islanders and Coronation Gulf women have the longest. Face height has been the only characteristic thus far studied wherein the females have not supported most of the differences found among the males.

On the basis of previous evidence we would expect to find the Nunatagmiut far exceeding all the other Eskimos in breadth of face. But strangely enough this is not so, for while the Nunatagmiut males have a mean face breadth of 147.05 mm. identical with the mean of the Coronation Gulfers, they are surpassed by the Kotzebue Sound men with a face breadth of 148.37 and the Victoria Islanders with 147.80. Unquestionably our Nunatagmiut group is composed of a narrower-headed leptoprosopic element as well as a

brachycephalic broader-faced element as evidenced in part by the high standard deviation of 7.33 and the coefficient of variation of 4.98. [p. 332 contains a chart] [333]

The Mackenzie Eskimos have the narrowest faces with a mean breadth of 144.70 mm., while the Barrow males are only 0.99 mm. broader.

The Nunatagmiut females are similar to the Victoria Islanders in mean face breadth as are the men, and again, are exceeded in this feature by the Kotzebue Sound women. Although the Mackenzie have comparatively narrow faces, they are nevertheless slightly broader than those of the Barrow and Coronation Gulf females.

Our Eskimos show a remarkable degree of variation in mean facial index, ranging from almost euryprosopism among the Victoria Islanders to distinct leptoprosopism among the Barrow males. The low index of 84.83 for the Victoria Islanders is due to their relatively short face heights, rather than to the breadth of their faces.

Although the Mackenzie men resemble the Kotzebue, Nunatagmiut and Coronation Gulfers in mean facial index, it must be remembered that they differ in having absolutely shorter and narrower faces.

Notwithstanding the fact that the Kotzebue Sound and Mackenzie females both have low indices bordering on euryprosopism, on examination we find that they are not due to similar factors, for, while the low index of the Mackenzie is the result of their short faces, the index of the Kotzebue Sound women may be traced to the excessive breadth of their faces rather than the height. [334]

The highest mean facial index among the females is that of the Coronation Gulfers, 88.27, with the Victoria Island and Barrow women having indices about 2 units lower.

In Table 12 we noticed that the Victoria Island males possessed the lowest mean facial index of all the groups. In this table when all the individuals are classified on the basis of the facial index divisions, we find that this fact is substantiated, for the Victoria Islanders have, as do the Kotzebue Sound males, 33.3 per cent euryprosopic faces. This relationship between the two groups ends here, for the rest of the Victoria Islanders are mainly mesoprosopic while the remaining Kotzebue Sound males are distinctly leptoprosopic.

The Barrow men have a mean facial index of 89.00, the highest of all the groups, more than half of their number being leptoprosopic and only 17.7 per cent euryprosopic.

The Nunatagmiut males show a fair number of short-broad faced individuals, a moderate amount of mesoprosopists, and a still greater number of long and narrow faced types. The Mackenzie males and Coronation Gulfers are similar to the Nunatagmiut in divisions of the facial index as well as in mean facial index, except that the Mackenzie are not as long faced as the other two groups. [p. 335 contains a chart] [336]

It is interesting to note that in the main, all the male groups are predominantly leptoprosopic, with the exception of the Victoria Islanders who possess a greater percentage of mesoprosopic than leptoprosopic faces.

At the first cursory glance at the females, it is evident that they are not as long and narrow faced as the males, for the Mackenzie and Kotzebue females are more euryprosopic than leptoprosopic. The Coronation Gulf, Victoria Island, and Barrow women are the most leptoprosopic groups among the females.

Cephalo-facial index, the relation between breadth of face and breadth of head, becomes a very important index when we are dealing with Eskimo or Indian material. In respect to the latter it has been found that the pure-blooded American Indians usually have mean cephalo-facial indices ranging from about 94 to 98. It has also been demonstrated by Jenks (10) and Sullivan, (11) that when Indians absorb some white blood the

10. Jenks, 1916.

11. Sullivan, 1920.

first evidence of their mixture is portrayed by the cephalo-facial index which drops below 94 and sometimes as low as 89. In Indian and white mixtures, the index falls, due to the decrease in diameters, the decrease in face breadth exceeding the decrease in head breadth.

The pure-blooded male Eskimos have mean cephalo-facial indices that are higher than those of the Indians, varying from approximately 96 to 100. It appears that when

Indian blood enters the Eskimo groups, the mean cephalo-facial index falls, but rarely below 95. Thus, in Eskimo and Indian mixtures, the index falls, due to the increase in diameters, the increase in cranial breadth exceeding the increase in facial breadth. When we discover Eskimo groups with mean cephalo-facial indices below 95, we can be quite sure we are dealing with an appreciable amount of white mixture, especially if we can demonstrate that it is due to a decrease in diameters, for, in Eskimo and white mixtures, the index falls as a result of a decrease in diameters, the decrease in facial breadth exceeding the decrease in cranial width.

With these facts in mind, we find on examination of Table 15 that none of our male groups show any evidence of white blood, but that the Nunatagmiut unquestionably betray their Athapaskan admixture in the comparatively low cephalo-facial index of 95.27. The most eskimoid group, the Mackenzie, possess the highest mean index, 98.98, while the remaining groups have face breadths that are a little more than 97 per cent of the breadth of their heads, with the exception of the Barrow who show an index of 96.48.

The 7 Kotzebue Sound females have a very high mean cephalo-facial index of 100.14, but this is probably due to the small size of the series and must therefore not be considered seriously. The Mackenzie women exceed the rest of the female groups with a mean index of 98.41, and again the Nunatagmiut have the lowest index, 95.09, followed closely by the Barrow whose mean index is only 0.47 index units higher.

9: Seltzer--322-344 (no date) 1933 Copper Eskimo-10
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If we accept the proposition that the great size of face breadth relative to head breadth is an index of the purity of Eskimo blood, then we must admit that the Mackenzie Eskimos are the purest Eskimos of all. It would also follow that the Nunatagmiut have had a great deal of Indian admixture in comparatively recent times. The intermediate position of the Kotzebue Sounders, Victoria Islanders and Coronation Gulfers gives the possibility of some degree of Indian admixture, but this supposition may best be left for further elaboration later.

In this table I have sorted all the individuals on the basis of a two-fold classification, each one being classified both as to his cephalic index and facial index. Thus, all the dolichocephalic types may be either dolicho-eurprosopic, dolicho-mesoprosopic, or dolicho-leptoprosopic. [pp. 338-339 contain charts] [340] The mesocephals and brachycephals are also divided in this fashion, so that every individual must fall into one of our 9 groups.

In examining the males, we find that the Kotzebue Sound group consists mainly of dolicho-leptoprosopic, meso-euryprosopic and meso-leptoprosopic types. The Barrow dolichos are leptoprosopic and the mesocephals are also long and narrow faced. The surprising fact about the Nunatagmiut group is that along with the meso and brachy types, we find a very small percentage of euryprosopism, for the mesocephals are mostly leptoprosopic while the brachycephals are markedly mesoprosopic and leptoprosopic.

9: Seltzer--322-344 (no date) 1933 Copper Eskimo-11
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The Victoria Islanders are excessively mesocephalic and have faces that are euryprosopic and mesoprosopic, while the Coronation Gulfers differ from them in having 33.9 per cent meso-leptoprosopic individuals.

The small size of the Kotzebue female series prevents us from arriving at any definite conclusions as to the associations of facial with cranial types; but among the Barrow women, the dolichocephals are notably leptoprosopic with the mesocephals having all types of faces. The Nunatagmiut females are predominately meso-leptoprosopic and brachy-euryprosopic. The Mackenzie dolichocephals and mesocephals show very few mesoprosopic faces but seem to run more to the extreme types.

The Victoria Islanders differ again from their southern Coronation Gulf neighbors, the former being in the main meso-mesoprosopic and meso-leptoprosopic, while the latter are excessively dolicho-leptoprosopic with a fair amount of meso-leptoprosopism.

It was indeed unfortunate that Stefansson was unable to obtain stature and sitting height measurements on more individuals and on [p. 341 contains a chart] [342] more Eskimo groups; yet, we must accept with ready hands all the evidence we can possibly obtain in order to help piece together the fragmentary evidence bearing upon Eskimo history.

The Nunatagmiut and Mackenzie males present the tallest mean statures that have heretofore been assigned to any Eskimo group. A mean stature approximating 169 cm.

places these Eskimos in what Martin (12) calls the 'Mittelgrosse Gruppen.' The Barrow

12. Martin, 1928.

men with a mean stature of 164.59 are far shorter than their more eastern relatives.

The females support the males in this characteristic with the Mackenzie and Nunatagmiut women being taller than the Barrow group.

In this instance, due to the absence of measurements on the lower extremities, sitting height becomes a very important measurement, for it indicates whether the magnitude of the stature lies in the torso or the lower limbs.

Curiously enough the tallest group, the male Nunatagmiut, have the shortest mean sitting height, which is smaller than that of the lower statured Barrow Eskimos. The Mackenzie males with a stature not quite as great as the Nunatagmiut have the largest mean sitting height of 91.20 cm. Evidently the tall stature of the Nunatagmiut group lies in the lower limbs, while that of the Mackenzie is inherent in the torso or vertebral column and head. [p. 343 contains a chart] [344]

Relative sitting height is an index which gives the ratio of sitting height to stature. The higher the index the greater is the length of the torso in relation to the total stature of the individual.

Therefore, the Nunatagmiut males and females have longer legs or shorter bodies

relative to their statures than either the Mackenzie or Barrow groups. The Barrow males and Mackenzie females have relatively the longest bodies or the shortest legs."

(no date) 1933

Copper Eskimo

"TABLE 2

Comparative Table of Mean Head Length

GROUP	AUTHORITY	MALES		FEMALES	
		No.	Mean	No.	Mean
East Greenland	Hansen (1893)	..	192.0	..	187.0
Angmassalik (E. Greenland)	Poulsen (1909)	26	192.27	10	183.50
Smith Sound	Steensby (1910)	8	196.25	10	187.6
Labrador	Pittard (1901)	8	195.00	6	193.66
Labrador	Duckworth and Pain (1900)	11	191.15	10	190.25
Labrador	Virchow (1880)	3	197.3	2	190.5
Baffin Island	Oettking (1931)	10	197.6	13	190.4
Southampton Island	Tocher (1902)	35	192.4	..	.....
Hudson Bay	Birket-Smith (1925)	99	193.7	..	.....
Coronation Gulf	Author	65	195.71	46	188.70
Coronation Gulf	Jenness (1923)	82	195.9	43	190.0
Victoria Island	Author	30	194.13	19	186.74
Mackenzie	Author	47	196.26	40	186.90
Mackenzie	Jenness (1923)	4	196.8	..	.....
Mackenzie (Koupagmiut)	Boas (1901)	12	195.2	6	187.8
Nuntagmiut	Author	64	190.03	55	182.91
Nuntagmiut	Boas (1901)*	11	189.0	5	181.0
Barrow	Author	62	192.39	26	184.88
Point Hope	Jenness (1923)	13	192.8	..	.....
Kotzebue Sound	Author	30	192.50	8	185.00
Seward Peninsula	Shapiro (1931)	40	195.3	..	.....
St. Lawrence Island	Hrdlička (1930)	63	193.3	48	185.6
Southwest Alaska	Hrdlička (1930)	61	192.9	24	188.5
Asiatic Eskimo	Jochelson-Brodsky (1906)	60	189.8	80	184.5

*Note by Stefansson: At the time of the Stone-Boas measurements the word 'Noontama'as used near the Mackenzie where Stone did measuring, meant: Any Eskimo from the American mainland farther west than Herschel Island. A Stone-Boas Nunatagmiut might therefore belong to any of a dozen Seltzer 'tribes'—to any of his divisions west of Herschel. Most of these were probably from Port Clarence, Cape Prince of Wales, or from the Kuvuk and Noatak rivers."

"TABLE 3
Head Breadth

	No.	RANGE	MEAN	S.D.	C.V.
Males.					
Kotzebue Sound	30	137-168	151.60±0.77	6.24±0.54	4.12±0.36
Barrow	62	136-166	151.11±0.49	5.71±0.35	3.78±0.23
Nunatagmiut	64	139-163	154.48±0.39	4.57±0.27	2.96±0.18
Mackenzie	47	138-157	146.68±0.41	4.19±0.29	2.86±0.20
Victoria Island	30	143-160	151.83±0.48	3.87±0.34	2.55±0.22
Coronation Gulf	65	142-160	151.09±0.36	4.32±0.26	2.86±0.17
Females:					
Kotzebue Sound	8	133-146	142.50±0.92	3.84±0.65	2.69±0.45
Barrow	26	138-153	144.54±0.51	3.87±0.36	2.68±0.25
Nunatagmiut	55	138-156	148.46±0.39	4.31±0.28	2.90±0.19
Mackenzie	40	131-153	140.90±0.37	4.49±0.34	3.19±0.24
Victoria Island	19	135-152	145.37±0.69	4.44±0.49	3.05±0.33
Coronation Gulf	46	135-153	143.87±0.40	4.05±0.28	2.82±0.20"

"TABLE 4
Comparative Table of Mean Head Breadth

GROUP	AUTHORITY	MALES No.	MALES Mean	FEMALES No.	FEMALES Mean
East Greenland	Hansen	..	147.0	..	141.0
Angmassalik (E. Greenland)	Poulsen	26	147.08	10	139.90
Smith Sound	Steensby	8	152.75	10	144.90
Labrador	Pittard	8	148.37	6	144.17
Labrador	Duckworth and Pain	11	147.65	10	141.80
Labrador	Virchow	3	149.0	2	137.0
Baffin Island	Oetteking	10	150.1	13	147.9
Southampton Island	Tocher	35	148.5	..	.....
Hudson Bay	Birket-Smith	99	149.7	..	.....
Coronation Gulf	Author	65	151.09	46	143.87
Coronation Gulf	Jenness	82	151.8	42	145.6
Victoria Island	Author	30	151.83	19	145.37
Mackenzie	Author	47	146.68	40	140.90
Mackenzie	Jenness	4	149.8	..	.....
Mackenzie (Koupagmiut)	Boas	12	144.0	5	141.5
Nunatagmiut	Author	64	154.48	55	148.46
Nunatagmiut	Boas	11	154.5	5	142.6
Barrow	Author	62	151.11	26	144.54
Point Hope	Jenness	13	150.6	..	.....
Kotzebue Sound	Author	30	151.60	8	142.50
Seward Peninsula	Shapiro	40	152.2	..	.....
St. Lawrence Island	Hrdlicka	63	154.0	46	147.7
Southwest Alaska	Hrdlicka	61	155.6	24	150.0
Asiatic Eskimo	Jochelson-Brodsky	60	153.0	30	146.8"

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"TABLE 5
Cephalic Index

	No.	RANGE	MEAN	S.D.	C.V.
Males:					
Kotzebue Sound	30	73-87	78.60±0.47	3.82±0.33	4.86±0.42
Barrow	62	73-87	78.55±0.28	3.22±0.20	4.10±0.25
Nunatagmiut	64	76-89	81.39±0.25	2.94±0.18	3.61±0.22
Mackenzie	48	68-82	74.75±0.26	2.65±0.18	3.55±0.24
Victoria Island	30	75-82	78.30±0.24	1.95±0.17	2.49±0.22
Coronation Gulf	65	69-82	77.26±0.20	2.44±0.14	3.16±0.19
Females:					
Kotzebue Sound	8	72-79	77.00±0.51	2.12±0.36	2.75±0.46
Barrow	26	73-83	78.12±0.36	2.75±0.26	3.52±0.33
Nunatagmiut	55	76-88	81.18±0.28	3.08±0.20	3.79±0.24
Mackenzie	40	70-82	75.38±0.28	2.65±0.20	3.52±0.27
Victoria Island	19	74-84	77.79±0.36	2.35±0.26	3.02±0.33
Coronation Gulf	46	73-80	76.24±0.17	1.67±0.12	2.19±0.15

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" TABLE 6
Divisions of the Cephalic Index

	DOLICHO-CEPHALIC (x-76.9)		MESO-CEPHALIC (77-81.9)		BRACHY-CEPHALIC (82-x)		TOTAL	
	No.	%	No.	%	No.	%	No.	%
Males:								
Kotzebue Sound	8	26.7	18	60.0	4	13.3	30	100
Barrow	16	25.8	33	53.2	13	21.0	62	100
Nunatagamiut	1	1.6	33	51.5	30	46.9	64	100
Mackenzie	38	79.2	9	18.7	1	2.1	48	100
Victoria Island	6	20.0	22	73.3	2	6.7	30	100
Coronation Gulf	18	27.7	46	70.8	1	1.5	65	100
Females:								
Kotzebue Sound	2	25.0	6	75.0	0	0	8	100
Barrow	6	23.1	16	61.5	4	15.4	26	100
Nunatagmiut	2	3.6	28	50.9	25	45.5	55	100
Mackenzie	26	65.0	13	32.5	1	2.5	40	100
Victoria Island	4	21.0	14	73.7	1	5.3	19	100
Coronation Gulf	24	52.2	22	47.8	0	0	46	100"

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Comparative Table of Mean Cephalic Index

GROUP	AUTHORITY	MALES No.	MALES Mean	FEMALES No.	FEMALES Mean
East Greenland	Hansen	..	76.9	..	75.2
Angmassalik (E. Greenland)	Hansen (1914)	31	77.8	18	76.5
Angmassalik (E. Greenland)	Poulsen	26	76.52	10	76.29
Southeast Greenland	Hansen (1914)	22	75.7	21	75.0
Southwest Greenland	Hansen (1914)	21	78.1	24	76.8
Greenland	Deniker (1913)	614	76.8	..	.....
Smith Sound	Steensby	8	78.06	10	77.40
Labrador	Pittard	8	76.11	6	74.84
Labrador	Duckworth and Pain	11	77.0	5	74.5
Labrador	Virchow	3	75.5	2	72.0
Baffin Island	Oetteking	10	76.2	13	77.7
Southampton Island	Tocher	35	77.2	..	.....
Hudson Bay	Birket-Smith	99	77.3	..	.....
Coronation Gulf	Author	65	77.26	46	76.24
Coronation Gulf	Jenness	82	77.6	42	76.7
Victoria Island	Author	30	78.30	19	77.79
Mackenzie	Author	48	74.75	40	75.38
Mackenzie	Jenness	4	76.1	..	.....
Mackenzie (Koupagmiut)	Boas	12	73.9	8	75.2
Nuntagmiut	Author	64	81.39	55	81.18
Nuntagmiut	Boas	11	81.6	5	78.8
Barrow	Author	62	78.55	36	78.12
Point Hope	Jenness	13	78.3	..	.....
Kotzebue Sound	Author	30	78.60	8	77.0
Seward Peninsula	Shapiro	40	77.98	..	.....
St. Lawrence Island	Hrdlička	63	79.7	48	79.6
Southwest Alaska	Hrdlička	61	80.7	24	79.6
Alaska	Boas (1895)	114	79.2	..	.....
Asiatic Eskimo	Jochelson-Brodsky	60	80.8	80	79.7

"TABLE 8
Face Height

	No.	RANGE	MEAN	S.D.	C.V.
Males:					
Kotzebue Sound	30	112-140	127.73±0.56	6.55±0.57	5.13±0.45
Barrow	62	116-149	129.63±0.67	7.79±0.47	6.01±0.36
Nunatagmiut	64	102-142	127.06±0.63	7.49±0.45	5.89±0.35
Mackenzie	47	109-140	125.57±0.71	7.18±0.50	5.72±0.40
Victoria Island	30	112-140	125.20±0.81	6.56±0.57	5.22±0.46
Coronation Gulf	65	111-146	127.72±0.55	6.56±0.39	5.14±0.30
Females:					
Kotzebue Sound	8	107-128	119.25±1.91	7.99±1.01	6.70±1.13
Barrow	25	98-130	119.40±1.01	7.49±0.71	6.27±0.60
Nunatagmiut	53	101-129	120.38±0.60	6.56±0.43	5.45±0.35
Mackenzie	40	96-133	117.08±0.82	7.67±0.58	6.55±0.49
Victoria Island	19	112-135	121.68±0.80	5.16±0.56	4.24±0.46
Coronation Gulf	45	110-140	121.73±0.70	6.99±0.50	5.74±0.41

9: Seltzer--330
116, 141

(no date) 1933

Copper Eskimo

TABLE 9
Comparative Table of Mean Face Height

GROUP	AUTHORITY	MALES		FEMALES	
		No.	Mean	No.	Mean
Smith Sound	Steensby	8	125.28	10	119.30
Labrador	Duckworth and Pain	11	127.0	10	116.5
Labrador	Virchow	3	127.7	2	119.0
Hudson Bay	Birket-Smith	99	123.5	..	.....
Coronation Gulf	Author	65	127.72	43	121.73
Coronation Gulf	Jenness	82	126.9	42	121.7
Victoria Island	Author	30	125.30	19	121.68
Mackenzie	Author	47	125.57	40	117.08
Mackenzie (Koupagmiut)	Boas	12	131.5	6	120.6
Nunatagmiut	Author	64	127.06	53	120.38
Nunatagmiut	Boas	11	128.4	5	119.8
Barrow	Author	63	120.63	35	119.40
Kotzebue Sound	Author	30	127.73	6	119.25
Seward Peninsula	Shapiro	40	126.9	..	.....
St. Lawrence Island	Hrdlicka	63	126.6	48	113.1
Southwest Alaska	Hrdlicka	61	126.7	24	121.1
Asiatic Eskimo	Jochelson-Brodsky	80	131.07	..	125.04

" TABLE 10
Face Breadth

	No.	RANGE	MEAN	S.D.	C.V.
Males:					
Kotzebue Sound	30	139-157	148.37±0.61	4.93±0.43	3.32±0.29
Barrow	62	132-158	145.69±0.55	6.45±0.39	4.43±0.27
Nunatagmiut	64	127-162	147.05±0.62	7.33±0.44	4.98±0.30
Mackenzie	47	123-157	144.70±0.60	6.09±0.42	4.21±0.29
Victoria Island	30	134-158	147.80±0.66	5.34±0.46	3.61±0.31
Coronation Gulf	65	138-157	147.05±0.39	4.64±0.27	3.16±0.19
Females:					
Kotzebue Sound	7	140-148	142.86±0.72	2.83±0.51	1.98±0.36
Barrow	25	128-153	138.16±0.71	5.30±0.51	3.84±0.37
Nunatagmiut	55	117-150	140.93±0.50	5.46±0.35	3.87±0.25
Mackenzie	40	124-149	138.72±0.56	5.26±0.40	3.79±0.29
Victoria Island	19	130-147	140.58±0.68	4.42±0.48	3.14±0.34
Coronation Gulf	45	128-148	138.33±0.36	3.54±0.25	2.56±0.18"

TABLE 11
Comparative Table of Mean Face Breadth

GROUP	AUTHORITY	MALES		FEMALES	
		No.	Mean	No.	Mean
Angmassalik (E. Greenland)	Poulsen	25	144.84	10	136.80
Smith Sound	Steensby	8	147.75	10	141.50
Labrador	Pittard	8	144.62	6	136.00
Labrador	Duckworth and Pain	11	142.2	10	136.6
Labrador	Virchow	3	146.7	2	134.5
Hudson Bay	Birket-Smith	99	143.4	..	.....
Coronation Gulf	Author	65	147.05	45	138.33
Coronation Gulf	Jenness	82	145.7	42	137.8
Victoria Island	Author	30	147.80	19	140.58
Mackenzie	Author	47	144.70	40	138.72
Mackenzie	Jenness	3	145.0	..	.....
Mackenzie (Koupagmiut)	Boas	12	147.8	6	139.7
Nunatagmiut	Author	64	147.05	55	140.93
Nunatagmiut	Boas	11	155.7	5	144.6
Barrow	Author	62	145.69	35	138.18
Point Hope	Jenness	13	146.3	..	.....
Kotzebue Sound	Author	30	148.37	7	142.86
Seward Peninsula	Shapiro	40	149.3	..	.....
St. Lawrence Island	Hrdlicka	63	147.3	48	140.3
Southwest Alaska	Hrdlicka	61	149.5	24	143.1
Asiatic Eskimo	Jochelson-Brodsky	60	147.6	30	139.4

"TABLE 12
Facial Index

	No.	RANGE	MEAN	S.D.	C.V.
Males:					
Kotzebue Sound	30	75-95	86.10±0.54	4.35±0.38	5.05±0.44
Barrow	62	79-99	89.00±0.42	4.80±0.30	5.49±0.33
Nunatagmiut	63	73-96	86.51±0.34	3.99±0.24	4.61±0.28
Mackenzie	46	79-96	86.80±0.43	4.29±0.30	4.94±0.35
Victoria Island	30	77-92	84.83±0.52	4.20±0.37	4.95±0.43
Coronation Gulf	65	77-103	86.94±0.37	4.48±0.27	5.15±0.30
Females:					
Kotzebue Sound	7	78-91	84.86±1.11	4.34±0.78	5.12±0.92
Barrow	25	76-95	86.52±0.67	4.96±0.47	5.73±0.55
Nunatagmiut	53	69-95	85.34±0.46	4.96±0.32	5.81±0.38
Mackenzie	39	67-93	84.23±0.57	5.25±0.40	6.23±0.48
Victoria Island	19	81-92	86.43±0.44	2.86±0.31	3.31±0.36
Coronation Gulf	45	79-98	88.27±0.47	4.42±0.31	5.01±0.36"

"TABLE 13
Divisions of the Facial Index

	EURYPRO-SOPIC (x-83.9)		MESOPRO-SOPIC (84-87.9)		LEPTOPRO-SOPIC (88-x)		TOTAL	
	No.	%	No.	%	No.	%	No.	%
Males:								
Kotzebue Sound	10	33.3	6	20.0	14	46.7	30	100
Barrow	11	17.7	15	24.2	36	58.1	62	100
Nunatagmiut	14	22.2	21	33.3	28	44.5	63	100
Mackenzie	10	21.8	18	39.1	18	39.1	46	100
Victoria Island	10	33.3	13	43.3	7	23.4	30	100
Coronation Gulf	12	18.5	22	33.8	31	47.7	65	100
Females:								
Kotzebue Sound	3	42.8	2	28.6	2	28.6	7	100
Barrow	7	28.0	6	24.0	12	48.0	25	100
Nunatagmiut	17	32.1	16	30.2	20	37.7	53	100
Mackenzie	17	43.6	8	20.5	14	35.9	39	100
Victoria Island	4	21.1	7	36.8	8	42.1	19	100
Coronation Gulf	6	13.3	15	33.3	24	53.4	45	100"

9: Seltzer--335
116, 141

(no date) 1933

Copper Eskimo

"TABLE 14
Comparative Table of Mean Facial Index

GROUP	AUTHORITY	MALES		FEMALES	
		No.	MEAN	No.	MEAN
Smith Sound	Steensby	8	85.29	10	83.64
Labrador	Duckworth and Pain	11	89.2	10	87.0
Labrador	Virchow	3	87.1	2	88.5
Hudson Bay	Birket-Smith	99	86.1	..	....
Coronation Gulf	Author	65	86.94	45	88.27
Coronation Gulf	Jenness	82	87.0	42	88.3
Victoria Island	Author	30	84.83	19	86.43
Mackenzie	Author	46	86.80	39	84.23
Mackenzie (Koupagmiut)	Boas	12	88.9	6	86.6
Nunatagmiut	Author	63	86.51	53	85.34
Nunatagmiut	Boas	11	82.8	5	83.1
Barrow	Author	62	89.00	25	86.53
Kotzebue Sound	Author	30	86.10	7	84.86
Seward Peninsula	Shapiro	40	84.92	..	....
St. Lawrence Island	Hrdlicka	63	86.7	48	80.6
Southwest Alaska	Hrdlicka	61	84.9	34	84.6
Asiatic Eskimo	Jochelson-Brodsky	60	88.8	78	89.7"

9: Seltzer--336
116, 141

(no date) 1933

Copper Eskimo

"TABLE 15
Cephalo-Facial Index

	No.	RANGE	MEAN	S.D.	C.V.
Males:					
Kotzebue Sound	30	91-103	97.90±0.40	3.23±0.28	3.30±0.29
Barrow	62	89-103	96.48±0.28	3.25±0.20	3.37±0.20
Nunatagmiut	63	79-103	95.27±0.40	4.73±0.28	4.96±0.30
Mackenzie	46	92-108	98.98±0.36	3.60±0.25	3.64±0.26
Victoria Island	30	91-102	97.47±0.31	2.50±0.22	2.56±0.22
Coronation Gulf	65	89-105	97.29±0.23	2.76±0.16	2.84±0.17
Females:					
Kotzebue Sound	7	97-105	100.14±0.66	2.59±0.47	2.59±0.47
Barrow	25	90-100	95.56±0.32	2.38±0.23	2.49±0.24
Nunatagmiut	54	86-101	95.09±0.28	3.12±0.20	3.28±0.21
Mackenzie	39	89-108	98.41±0.38	3.50±0.27	3.56±0.27
Victoria Island	19	90-101	96.68±0.47	3.04±0.33	3.14±0.34
Coronation Gulf	46	92-101	96.20±0.22	2.20±0.15	2.29±0.16"

"TABLE 16

Comparative Table of Mean Cephalic Index

GROUP	AUTHORITY	MALES		FEMALES	
		No.	MEAN	No.	MEAN
Angmassalik (E. Greenland)	Poulsen	25	98.44	10	97.76
Smith Sound	Steensby	8	96.56	10	97.65
Labrador	Pittard	8	97.66	6	95.49
Labrador	Duckworth and Pain	11	96.4	10	96.3
Labrador	Virchow	3	98.4	2	98.4
Hudson Bay	Birket-Smith	99	95.8	..	....
Coronation Gulf	Author	65	97.20	46	96.20
Coronation Gulf	Jenness	82	96.0	42	94.6
Victoria Island	Author	30	97.47	19	96.88
Mackenzie	Author	46	98.98	39	98.41
Mackenzie (Koupagmiut)	Boas	12	102.7	6	98.0
Nunatagmiut	Author	63	95.27	54	95.09
Nunatagmiut	Boas	11	100.8	3	101.6
Barrow	Author	62	96.48	25	95.56
Kotzebue Sound	Author	30	97.90	7	100.14
Seward Peninsula	Shapiro	40	98.15	..	....
St. Lawrence Island	Hrdlicka	63	95.6	48	95.0
Southwest Alaska	Hrdlicka	61	96.1	24	95.4
Asiatic Eskimo	Jochelson-Brodsky	60	96.6	80	96.3 "

"TABLE 17

Association of Cranial Types with Facial Types

	KOTZEBUE		BARROW		NUNATAGMIUT		MACKENZIE		VIC. ISLAND		COR. GULF	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Males												
Dolicho-Euryprosopic	0	0	1	1.6	0	0	9	19.6	1	3.3	2	3.1
Dolicho-Mesoprosopic	2	6.7	3	4.8	0	0	15	32.6	3	10.0	7	10.8
Dolicho-Leptoprosopic	6	20.0	12	19.4	1	1.8	13	28.2	2	6.7	9	13.8
Meso-Euryprosopic	8	26.7	7	11.3	7	11.1	1	2.2	9	30.0	9	13.8
Meso-Mesoprosopic	3	10.0	7	11.3	10	15.8	4	8.7	9	30.0	15	23.1
Meso-Leptoprosopic	7	23.3	19	30.6	16	25.4	3	6.5	4	13.4	22	33.9
Brachy-Euryprosopic	2	6.7	3	4.8	7	11.1	0	0	0	0	1	1.5
Brachy-Mesoprosopic	1	3.3	5	8.1	11	17.5	0	0	1	3.3	0	0
Brachy-Leptoprosopic	1	3.3	5	8.1	11	17.5	1	2.2	1	3.3	0	0
Totals	30	100	62	100	63	100	46	100	30	100	65	100
Females												
Dolicho-Euryprosopic	1	14.3	1	4.0	0	0	10	25.6	3	10.5	2	4.4
Dolicho-Mesoprosopic	1	14.3	0	0	0	0	6	15.4	1	3.3	7	15.6
Dolicho-Leptoprosopic	0	0	5	20.0	2	3.7	9	23.1	1	3.3	15	33.3
Meso-Euryprosopic	2	28.6	4	16.0	5	9.3	6	15.4	3	10.3	4	8.9
Meso-Mesoprosopic	1	14.3	5	20.0	8	14.8	2	5.1	8	31.6	8	17.8
Meso-Leptoprosopic	2	28.6	6	24.0	14	25.9	5	12.8	8	31.6	9	20.0
Brachy-Euryprosopic	0	0	2	8.0	13	33.3	1	2.6	0	0	0	0
Brachy-Mesoprosopic	0	0	1	4.0	8	14.8	0	0	0	0	0	0
Brachy-Leptoprosopic	0	0	1	4.0	5	9.3	0	0	1	5.3	0	0
Totals	7	100	25	100	54	100	39	100	19	100	45	100"

9; Seltzer--340 (no date) 1933 Copper Eskimo
116, 141

"TABLE 18
Stature in cm.

	No.	RANGE	MEAN	S.D.	C.V.
Males:					
Barrow.....	24	149-184	164.59±1.14	8.26±0.80	5.02±0.49
Nunatagmiut.....	26	155-180	169.12±0.90	6.78±0.63	4.01±0.38
Mackenzie.....	25	159-179	168.96±0.74	5.45±0.52	3.23±0.31
Females:					
Barrow.....	7	150-161	153.71±0.98	3.84±0.69	2.49±0.45
Nunatagmiut.....	13	147-164	155.08±0.96	5.14±0.68	3.31±0.44
Mackenzie.....	16	144-163	155.50±1.00	5.93±0.71	3.81±0.45"

9: Seltzer--341
116, 141

(no date) 1933

Copper Eskimo

"TABLE 19

Comparative Table of Mean Stature

GROUP	AUTHORITY	MALES		FEMALES	
		No.	MEAN	No.	MEAN
Angmassalik (E. Greenland)	Hansen(1914)	31	164.7	15	155.1
Angmassalik (E. Greenland)	Poulsen	26	162.35	10	148.13
Southeast Greenland	Hansen (1914)	22	160.4	23	152.9
Southwest Greenland	Hansen (1914)	21	157.6	24	151.6
West Greenland	Hansen (1893)	..	162.0	..	152.0
Greenland	Deniker	614	162.1	..	.....
Smith Sound	Steensby	8	157.4	10	145.4
Labrador	Pittard	8	158.2	8	156.6
Labrador	Duckworth and Pain.	11	157.7	10	149.7
Labrador	Virchow	3	159.7	2	148.6
Labrador	Boas (1895)	26	157.5	..	148.0
Cumberland Sound(Baffin Land)	Boas (1907)	9	162.0	12	151.8
Cumberland Strait(Baffin Land)	Sutherland (1856)	23	158.50	30	148.08
Baffin Island	Oetteking	10	162.4	13	147.9
Hudson Bay	Birket-Smith	99	160.6	..	.....
Melville Peninsula	Parry (1824)	20	166.0	20	153.7
Southampton Island	Tocher	35	162.0	..	.....
Coronation Gulf	Jenness	82	164.8	42	156.4
Mackenzie	Author	25	160.96	16	155.50
Mackenzie (Koupagmiut)	Boas	13	167.5	6	151.5
Nunatagmiut	Author	36	160.12	13	155.08
Nunatagmiut	Boas	11	167.9	5	158.6
Barrow	Author	24	164.59	7	153.71
Point Hope	Jenness	13	166.5	..	.....
Seward Peninsula	Shapiro	39	165.4	..	.....
St. Lawrence Island	Hrdlička	63	163.3	48	151.35
Southwest Alaska	Hrdlička	61	162.4	34	153.10
Alaska	Boas (1898)	34	165.8	..	158.1
Alaska	Deniker (1913)	85	163.0	..	.....
Asiatic Eskimo	Jochelson-Brodsky	61	162.3	80	151.8"

9: Seltzer--342 (no date) 1933 Copper Eskimo
116, 141

"TABLE 20
Sitting Height

	NO.	RANGE	MEAN	S.D.	C.V.
Males:					
Barrow	22	78-96	88.18±0.57	3.93±0.40	4.46±0.45
Nunatagmiut	21	76-98	86.43±0.63	4.30±0.45	4.98±0.52
Mackenzie	10	84-96	91.20±0.76	3.57±0.54	3.91±0.59
Females:					
Barrow	5	79-86	82.20±0.69	2.27±0.51	2.76±0.59
Nunatagmiut	12	79-88	82.67±0.48	2.46±0.34	2.98±0.41
Mackenzie	11	79-90	85.54±0.74	3.65±0.52	4.27±0.61"

9: Seltzer--343
116, 141

(no date) 1933

Copper Eskimo

"TABLE 21

Comparative Table of Mean Sitting Height

GROUP	AUTHORITY	MALES		FEMALES	
		No.	MEAN	No.	MEAN
Angmassalik (E. Greenland)	Poulsen	24	86.79	10	79.98
Smith Sound	Steensby	8	82.5	10	78.1
Labrador	Duckworth and Pain	11	81.0	10	79.7
Southampton Island	Tocher	35	85.2	..	.....
Mackenzie	Author	10	91.20	11	85.54
Mackenzie (Koupagmiut)	Boas	12	89.3	6	81.2
Nunatagmiut	Author	21	86.43	12	82.67
Nunatagmiut	Boas	11	86.6	5	81.6
Barrow	Author	22	88.18	5	82.20
St. Lawrence Island	Hrdlička	63	88.40	48	84.07
Southwest Alaska	Hrdlička	61	89.00	34	84.36"

"TABLE 22
Relative Sitting Height

	No.	RANGE	MEAN	S.D.	C.V.
Males.					
Barrow.....	22	52-56	53.68±0.18	1.26±0.13	2.35±0.24
Nunatagmiut.....	21	47-55	51.52±0.28	1.92±0.20	3.73±0.39
Mackenzie.....	10	50-57	53.30±0.33	1.55±0.23	2.91±0.44
Females:					
Barrow.....	5	52-56	53.60±0.49	1.63±0.35	3.04±0.65
Nunatagmiut.....	11	50-56	53.45±0.36	1.78±0.26	3.33±0.48
Mackenzie.....	11	53-57	55.18±0.26	1.27±0.18	2.30±0.33"

9: Seltzer--344-346 (no date) 1933 Copper Eskimo-1-2
116, 128, 141

"Up to this point, I have presented the summary of the measurements of the six Eskimo groups without attempting to demonstrate the relationships existent between them. Now it is my purpose, by means of statistical devices, to detect the differences and similarities between the groups and to show their statistical significance beyond a reasonable doubt.

Accordingly, I have calculated the differences between the means of the various groups and the probable errors of these differences. And finally their relationship was expressed in terms of 'xpe,' obtained by dividing the differences between means by the probable errors of the differences.

In the following tables, I have used this statistical method to compare one Eskimo group with another. There are differences between every group, but now it is possible to demonstrate which differences are significant beyond a reasonable doubt, and which ones are merely different due to random sampling.

The first column of every table contains the means and probable errors of the main group subject to comparison. The rest of the groups [p. 345 contains a chart] [346] have two columns, the first giving the differences between means for each measurement, and at the base of which I have computed the average of the differences irrespective of signs; the second column headed by 'xpe' gives the number of times the difference exceeds the probable error of the difference.

All differences that have xpe's over 3.00 are unquestionably significant differences

and are printed in bold faced type, for the chances are more than 96 out of 100 that such differences are not due to random sampling. Those differences that are between 2 and 3 times their own probable errors, whose chances of being significant are from 82 to 96 out of 100, may be said to be possibly or probably significant and are printed in italics. All differences having an xpe less than 2.00 are considered to be differences due merely to the random sampling process."

9: Seltzer--345
116, 141

(no date) 1933

Copper Eskimo

"TABLE 23
Comparative Table of Mean Relative Sitting Height

GROUP	AUTHORITY	MALES		FEMALES	
		No.	MEAN	No.	MEAN
Angmassalik (E. Greenland)	Poulsen	24	53.31	10	53.64
Smith Sound	Steensby	8	52.4	10	53.7
Labrador	Duckworth and Pain	11	51.4	10	53.3
Southampton Island	Tocher	35	52.6	..	.....
Mackenzie	Author	10	53.30	11	55.18
Mackenzie (Koupagmiut)	Boas	12	53.5	6	53.7
Nunatagmiut	Author	21	51.52	11	53.45
Nunatagmiut	Boas	11	52.6	5	52.4
Barrow	Author	22	53.68	5	53.80
St. Lawrence Island	Hrdlicka	63	54.13	48	55.55
Southwest Alaska	Hrdlicka	61	54.90	24	55.10"

9: Seltzer--346-354 (no date) 1933 Copper Eskimo-1-4
116, 141

"In Table 24 I have compared the measurements and indices of the Kotzebue men and women with those of the rest of the Eskimos.

The most striking feature of this table is the extraordinarily close resemblance between the Kotzebue Sound and Victoria Island males. There is no question about this similarity, for the Victoria Islanders are significantly different only in one characteristic, face height, and this is but a possibly significant difference. This fact is all the more remarkable when we consider that the Kotzebue Sound people live on the northwest coast of Alaska, while the Victoria Islanders are far to the eastward, north of Coronation Gulf. The average difference between the Kotzebue and the Victoria Island males is only 0.99.

The Victoria Island females do not evidence as great a similarity with the Kotzebue females, but this may be possibly due to the extremely small size of the Kotzebue sample, there being but 8 in the series.

The next closest relationship is found between the Kotzebue and Coronation Gulf males, the latter being significantly different in head length and possibly different in cephalic index.

Although the Barrow are most closely situated to the Kotzebue, the males show more differences than with the Victoria Islanders and Coronation Gulfers, the Barrow being significantly different in face breadth and facial index, and possibly different in face height and cephalo-facial index.

The Nunatagmiut and Mackenzie males show no evidence of similarity with the Kotzebue Sound Eskimos. [347]

The Kotzebue females are in general distinguished from the rest of the women in having narrower heads, much broader faces and extremely high cephalo-facial indices.

From Table 25 the Barrow males appear t[illegible] most closely related to their Kotzebue neighbors. The rest of the groups show no app[illegible]ent similarity to the Barrow men.

The Barrow females do not differ from their Eskimo relatives as do the males, for the Victoria Island women are inseparable physically from the Barrow with only one possibly significant difference, face breadth, and having an average difference of 1.26. Although the Coronation Gulf females show more significant differences than the Victoria Islanders, they are still closer to the Barrow than are the Kotzebue Sound women.

Table 26 contrasts the Nunatagmiut with the other Eskimo groups. The most outstanding feature of this table is the fact that the Nunatagmiut do not exhibit any close relationships with the other Eskimos. They have the shortest heads, the broadest heads, the highest cephalic indices, the lowest cephalo-facial indices, and the lowest relative sitting height of all the Eskimos considered in this paper.

These are all Indian-like features and clearly betray the presence of considerable Indian blood that must have entered this group in comparatively recent times.

An examination of Table 27 accentuates all the distinctive characteristics of the Mackenzie Eskimo. There is no group, either among the males or females, that can

claim any close relationship with them whatsoever. They are distinguished from the rest of the Eskimos by the absence of Indian tendencies and by the exaggeration of Eskimo features. The Mackenzie heads are the longest, narrowest, with the lowest cephalic indices; their faces are the narrowest with very high cephalo-facial indices; and the relation of sitting height to stature indicates that they are endowed with very long trunks.

If we take all these facts into consideration, and if we accept the relation between the breadth of head and the breadth of face as being an index of purity of Eskimo blood, then we must conclude that the Mackenzie are the most Eskimoid of all the Eskimos.

There are three important facts, concerning the Victoria Island males, that are indicated in Table 28.

• The first one pertains to the outstanding similarity between the Victoria Island and Kotzebue males which has been already pointed out. [pp. 348-353 contain charts] [354] The second demonstrates that the Kotzebue Sound Eskimos are more like the Victoria Island men than the geographically more closely situated Coronation Gulf group. And finally, the Victoria Islanders lean toward Canadian Indian features to a greater degree than their southern Coronation Gulf neighbors.

The female Victoria Island series shows unusual identity with the Barrow, more so than with the Coronation Gulfers. The Kotzebue women would not differ very much from

the Victoria Islanders were it not for the former's extremely high cephalo-facial index. Again as in the males, the Victoria Island females show greater Indian tendencies in physical features than the Coronation Gulf group.

The male Coronation Gulf Eskimos resemble the Kotzebue Sound men more than they do the Victoria Islanders.

The Victoria Island females are fairly similar to the Coronation Gulf women, being significantly different in cephalic index by 1.55 points, and possible different in face breadth and facial index."

9: Seltzer--348
116, 141

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Copper Eskimo

"TABLE 24

Differences Between Means of Kotzebue Sound and Other Eskimo Males and Females

	KOTZEBUE	BARROW		NUNATAGMIUT		MACKENZIE		VICTORIA IS.		CORO. GULF	
Males	Mean	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.
Head Length	182.50±0.72	-0.11	-0.12	-3.47	-3.01	3.76	4.13	1.63	1.75	3.21	3.73
Head Breadth	151.60±0.77	-0.49	-0.53	2.88	3.39	-4.92	-5.80	0.23	0.25	-0.51	-0.60
Cephalic Index	78.60±0.47	-0.05	-0.09	2.79	5.27	-3.85	-7.13	-0.30	-0.57	-1.34	-2.63
Face Height	127.73±0.56	1.90	2.19	-0.67	-0.80	-2.16	-2.40	-2.53	-2.80	-0.01	-0.01
Face Breadth	148.37±0.61	-2.66	-3.27	-1.32	-1.82	-3.67	-4.32	-0.57	-0.83	-1.33	-1.83
Facial Index	86.10±0.54	2.90	4.20	0.41	0.62	0.70	1.01	-1.27	-1.70	0.84	1.28
Cephalo-Facial Index	97.90±0.40	-1.42	-2.90	-2.63	-4.61	1.08	2.00	-0.43	-0.84	-0.61	-1.33
Average differences		1.36		1.88		2.88		0.99		1.12	
Females											
Head Length	185.00±0.45	-0.13	-0.16	-2.09	-3.37	1.90	2.83	1.74	1.51	3.70	5.70
Head Breadth	142.50±0.92	2.04	1.94	5.96	5.96	-1.60	-1.60	2.87	2.50	1.37	1.37
Cephalic Index	77.00±0.81	1.12	1.81	4.18	7.21	-1.62	-2.80	0.78	1.27	-0.78	-1.41
Face Height	119.25±1.91	0.15	0.07	1.13	0.56	-2.17	-1.04	2.43	1.17	2.48	1.22
Face Breadth	142.86±0.72	-4.70	-4.65	-1.93	-2.19	-4.14	-4.55	-2.38	-2.30	-4.53	-5.60
Facial Index	84.66±1.11	1.66	1.28	0.48	0.40	-0.63	-0.50	1.57	1.32	3.41	3.84
Cephalo-Facial Index	100.14±0.66	-4.58	-5.19	-5.05	-7.01	-1.73	-2.28	-3.46	-4.27	-3.94	-5.63
Average differences		2.05		2.97		1.97		2.15		2.88	

9: Seltzer--349
116, 141

(no date) 1933

Copper Eskimo

"TABLE 25

Differences Between Means of Barrow and Other Eskimo Males and Females

	BARROW	KOTZEBUE		NUNATAGMIUT		MACKENZIE		VICTORIA IS.		CORO. GULF	
Males	Mean	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.
Head Length	192.39±0.54	0.11	0.12	−2.36	−3.52	3.87	4.96	1.74	2.20	3.32	4.67
Head Breadth	151.11±0.49	0.49	0.53	3.37	5.62	−4.42	−6.92	0.72	1.04	−0.02	−0.03
Cephalic Index	78.55±0.28	0.05	0.09	3.84	7.49	−3.80	−9.74	−0.25	−0.70	−1.29	−3.70
Face Height	129.63±0.67	−1.90	−2.19	−2.57	−2.79	−4.06	−4.14	−4.43	−4.23	−1.91	−2.20
Face Breadth	145.69±0.55	2.68	3.27	1.36	1.66	−0.99	−1.30	2.11	2.33	1.36	2.03
Facial Index	89.00±0.42	−3.90	−4.30	−2.49	−4.53	−2.20	−3.67	−4.17	−6.22	−2.06	−3.44
Cephalo-Facial Index	96.48±0.28	1.42	2.90	−1.21	−2.48	2.50	5.44	0.99	2.36	0.81	2.26
Stature	164.59±1.14	....	....	4.53	3.12	4.37	3.95	....	....	....	....
Sitting Height	88.18±0.57	....	....	−1.75	−2.06	3.01	3.18	....	....	....	....
Relative Sitting Height	53.68±0.18	....	....	−3.16	−6.55	−0.38	−1.03	....	....	....	....
Average differences		1.36		2.48		2.96		2.06		1.84	
Females											
Head Length	184.88±0.61	0.12	0.16	−1.97	−2.67	2.02	2.38	1.76	1.44	3.82	4.96
Head Breadth	144.54±0.51	−3.04	−1.94	3.92	6.13	−3.64	−5.78	0.83	0.97	−0.67	−1.03
Cephalic Index	78.12±0.36	−1.12	−1.81	3.06	6.86	−2.74	−5.96	−0.33	−0.65	−1.88	−4.70
Face Height	119.40±1.01	−0.15	−0.07	0.96	0.83	−2.32	−1.78	2.28	1.78	2.33	1.89
Face Breadth	138.16±0.71	4.70	4.65	2.77	3.19	0.56	0.62	2.42	2.47	0.17	0.22
Facial Index	86.52±0.67	−1.66	−1.28	−1.18	−1.46	−2.29	−3.60	−0.09	−0.11	1.75	2.13
Cephalo-Facial Index	95.56±0.32	4.58	6.19	−0.47	−1.12	3.85	5.81	1.13	1.97	0.64	1.68
Stature	153.71±0.98	....	....	1.37	1.00	1.79	1.28	....	....	....	....
Sitting Height	82.20±0.69	....	....	0.47	0.56	3.34	3.31	....	....	....	....
Relative Sitting Height	53.60±0.49	....	....	−0.15	−0.24	1.58	2.82	....	....	....	....
Average differences		2.05		1.63		2.31		1.26		1.61	

"TABLE 26

Differences Between Means of Nunatagmiut and Other Eskimo Males and Females

	NUNATAGMIUT	KOTZEBUE		BARROW		MACKENZIE		VICTORIA IS.		CORO. GULF	
Males	Mean	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.
Head Length	190.03±0.40	1.47	3.01	2.36	3.52	6.23	9.02	4.10	5.78	5.68	9.16
Head Breadth	154.48±0.39	-2.88	-3.39	-3.37	-5.62	-7.80	14.44	-3.65	-4.50	-3.39	-5.78
Cephalic Index	81.39±0.25	-2.79	-5.27	-2.84	-7.49	6.64	18.33	3.09	-6.83	-4.18	-12.91
Face Height	127.06±0.63	0.67	0.80	2.57	2.79	-1.49	-1.57	-1.86	-1.81	0.66	0.79
Face Breadth	147.08±0.62	1.32	1.52	-1.36	-1.66	-2.35	-2.73	0.75	0.82	0.00	0.00
Facial Index	86.51±0.34	-0.41	-0.62	2.49	4.53	0.29	0.53	-1.68	-2.71	0.43	0.84
Cephalo-Facial Index	95.27±0.40	2.83	4.61	1.21	2.48	3.71	6.87	2.20	4.31	2.02	4.40
Stature	169.12±0.90	....	....	-4.53	3.12	-0.16	-0.14	....	....	....	....
Sitting Height	86.43±0.63	....	....	1.75	2.06	4.77	4.82	....	....	....	....
Relative Sitting Height	51.52±0.28	....	....	2.15	6.55	1.78	4.05	....	....	....	....
Average differences		1.88		2.46		3.52		2.33		2.33	
Females											
Head Length	182.91±0.43	2.09	3.37	1.97	2.67	3.99	5.39	3.83	3.36	5.79	9.19
Head Breadth	148.46±0.39	-5.96	-5.96	3.92	-6.13	-7.56	-14.00	-3.09	-3.91	-4.59	-6.20
Cephalic Index	81.18±0.28	-4.18	-7.21	-3.06	-6.66	-5.80	-14.50	-3.39	-7.37	-4.94	-14.97
Face Height	120.38±0.60	-1.13	-0.56	-0.98	-0.83	-3.30	-3.27	1.30	1.30	1.35	1.47
Face Breadth	140.93±0.50	1.93	2.19	-2.77	-3.19	-2.21	-2.95	-0.35	-0.42	-2.60	-4.23
Facial Index	85.34±0.46	-0.48	-0.40	1.18	1.46	-1.11	-1.52	1.38	2.21	2.93	4.44
Cephalo-Facial Index	95.09±0.28	5.05	7.01	0.47	1.12	3.32	7.07	1.59	2.89	1.11	3.84
Stature	155.08±0.96	....	....	-1.37	-1.00	0.42	0.30	....	....	....	....
Sitting Height	82.67±0.48	....	....	-0.47	0.56	2.87	3.26	....	....	....	....
Relative Sitting Height	53.45±0.36	....	....	0.15	0.24	1.73	3.84	....	....	....	....
Average differences		2.97		1.63		3.23		2.13		3.33	

"TABLE 27

Differences Between Means of Mackenzie and Other Eskimo Males and Females

	MACKENZIE	KOTZEBUE		BARROW		NUNATAGMIUT		VICTORIA IS.		CORO. GULF	
Males	Mean	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.
Head Length	196.26±0.56	3.76	-4.13	-3.87	-4.96	-6.23	-9.02	-2.13	-2.63	-0.35	-0.76
Head Breadth	146.68±0.41	4.92	5.60	4.43	6.92	7.80	14.44	5.15	8.18	4.41	8.03
Cephalic Index	74.75±0.26	3.85	7.13	3.80	9.74	6.64	18.33	3.55	9.87	3.51	7.61
Face Height	125.57±0.71	2.16	2.40	4.08	4.14	1.49	1.57	-0.37	-0.36	2.15	2.42
Face Breadth	144.70±0.60	3.67	4.32	0.99	1.30	2.35	2.73	3.10	3.49	3.35	3.31
Facial Index	86.80±0.43	-0.70	-1.01	2.20	3.67	-0.29	-0.53	-1.97	-2.94	0.14	0.25
Cephalo-Facial Index	98.98±0.36	-1.08	-2.00	-2.50	-5.44	-3.71	-6.78	-1.51	-3.15	-1.69	-4.02
Stature	168.96±0.74	....	....	-4.37	-3.95	0.16	0.14	....	....	....	....
Sitting Height	91.20±0.76	....	....	-3.02	-3.18	-4.77	-4.82	....	....	....	....
Relative Sitting Height	53.50±0.33	....	....	0.38	1.03	-1.78	-4.05	....	....	....	....
Average differences		2.88		2.96		3.52		2.54		1.98	
Females											
Head Length	186.90±0.60	-1.90	-2.53	-2.02	-2.38	-3.99	-5.39	-0.16	-0.13	1.80	2.37
Head Breadth	140.90±0.37	1.60	1.60	3.64	5.78	7.56	14.00	4.47	5.68	2.97	5.40
Cephalic Index	75.38±0.28	1.62	2.80	2.74	5.96	5.80	14.50	2.41	5.24	0.86	2.61
Face Height	177.08±0.82	2.17	1.04	2.32	1.76	3.30	3.27	4.60	4.00	4.65	4.31
Face Breadth	138.72±0.56	4.14	4.55	-0.56	-0.62	2.21	2.95	1.86	2.11	-0.39	-0.59
Facial Index	84.23±0.57	0.63	0.50	2.39	2.60	1.11	1.52	3.20	3.10	4.04	5.46
Cephalo-Facial Index	98.41±0.38	1.73	2.28	-2.85	-5.81	-3.32	-7.07	-1.73	-2.88	-2.21	-5.02
Stature	155.50±1.00	....	....	-1.79	-1.28	-0.42	-0.30	....	....	....	....
Sitting Height	85.54±0.74	....	....	3.34	-3.31	-2.87	-3.26	....	....	....	....
Relative Sitting Height	55.18±0.26	....	....	-1.58	-2.82	-1.73	-3.84	....	....	....	....
Average differences		1.97		2.31		3.23		2.49		2.42	

9: Seltzer--352
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(no date) 1933

Copper Eskimo

"TABLE 28

Differences Between Males of Victoria Island and Other Eskimo Males and Females

	VICTORIA IS.	KOTZEBUE		BARROW		NUNATAGMIUT		MACKENZIE		CORO. GULF	
Males	Mean	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe.
Head Length	194.13±0.58	-1.63	-1.75	-1.74	-2.20	-4.10	-5.78	-3.13	-3.63	-1.58	-2.10
Head Breadth	151.83±0.48	0.23	0.25	0.72	1.04	2.65	4.50	-5.15	-6.18	-0.74	-1.23
Cephalic Index	78.30±0.24	0.30	0.57	0.25	0.70	3.09	5.83	-3.55	-9.87	-1.04	-3.25
Face Height	125.20±0.81	2.53	2.60	4.43	4.22	1.86	1.81	0.37	0.36	2.52	2.57
Face Breadth	147.80±0.66	0.57	0.63	-2.11	-2.33	-0.75	-0.83	-3.10	-3.49	-0.75	-0.98
Facial Index	84.83±0.52	1.27	1.70	4.17	6.22	1.68	2.71	1.97	3.94	2.11	3.29
Cephalo-Facial Index	97.47±0.31	0.43	0.84	-0.99	-2.36	-2.20	-4.31	1.51	3.15	-0.18	-0.47
Average differences		0.99		2.06		2.33		2.54		1.27	
Females											
Head Length	186.74±1.06	-1.74	1.51	1.76	1.44	3.53	-3.36	0.16	0.13	1.96	1.69
Head Breadth	145.37±0.69	-2.87	-2.50	0.83	0.97	3.09	3.91	-4.47	-5.66	-1.50	-1.88
Cephalic Index	77.79±0.36	0.79	1.27	0.33	0.65	3.39	7.37	-2.41	-5.24	-1.55	-3.87
Face Height	121.68±0.80	-2.43	1.17	2.28	1.78	1.30	1.30	-4.80	-4.00	0.05	0.05
Face Breadth	140.58±0.68	2.28	2.30	-2.42	-2.47	0.35	0.42	-1.86	-2.11	-2.25	-2.92
Facial Index	86.43±0.44	-1.57	-1.32	0.09	0.11	-1.39	-2.21	-2.20	-3.10	1.84	2.83
Cephalo-Facial Index	96.68±0.47	3.46	4.27	1.12	1.97	1.59	2.89	1.73	2.88	-0.48	-0.92
Average differences		2.15		1.26		2.13		2.48		1.38	

9: Seltzer--353
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Copper Eskimo

"TABLE 29

Differences Between Means of Coronation Gulf and Other Eskimo Males and Females

	CORO. GULF	KOTZEBUE		BARROW		NUNATAGMIUT		MACKENZIE		VICTORIA IS.	
Males	Mean	diff.	xpe.	diff.	xpe.	diff.	xpe.	diff.	xpe	diff.	xpe.
Head Length	195.71	0.47	3.21	3.73	3.32	4.67	5.68	9.16	0.55	0.76	1.58	2.10
Head Breadth	151.09	0.36	0.51	0.60	0.02	0.03	3.39	6.78	4.41	9.02	0.74	1.23
Cephalic Index	77.26	0.20	1.34	2.63	1.20	3.70	4.13	12.91	2.51	7.61	1.04	3.25
Face Height	127.72	0.55	0.01	0.01	1.91	2.20	0.66	0.79	2.15	2.42	2.52	2.57
Face Breadth	147.05	0.39	1.32	1.83	1.38	2.03	0.00	0.00	2.35	3.31	0.75	0.98
Facial Index	86.94	0.37	0.84	1.28	2.06	3.44	0.43	0.84	0.14	0.25	2.11	3.39
Cephalo-Facial Index	97.29	0.23	0.61	1.33	0.81	2.26	2.02	4.40	1.69	4.02	0.18	0.47
Average differences			1.12		1.54		2.33		1.98		1.27	
Females												
Head Length	188.70	0.47	3.70	5.70	3.82	4.90	5.79	9.19	1.80	2.37	1.96	1.69
Head Breadth	143.87	0.40	1.37	1.37	0.67	1.03	4.59	8.20	2.97	5.40	1.50	1.88
Cephalic Index	76.24	0.17	0.76	1.41	1.88	4.70	4.94	14.97	0.86	2.61	1.55	3.87
Face Height	121.73	0.70	2.48	1.22	2.33	1.89	1.35	1.47	4.63	4.31	0.05	0.05
Face Breadth	138.33	0.36	4.53	5.60	0.17	0.22	2.60	4.23	0.39	0.59	2.25	2.92
Facial Index	88.27	0.47	3.41	2.84	1.75	2.13	2.93	4.44	4.04	5.48	1.84	2.83
Cephalo-Facial Index	96.20	0.22	3.94	5.63	0.64	1.65	1.11	3.84	2.21	5.02	0.48	0.92
Average differences			2.88		1.61		3.33		2.42		1.38	

9: Seltzer--360
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Copper Eskimo

"TABLE 30

Comparison Between Chipewyan Males and Western and Central Eskimos

No.	CHIPEWYAN PURE (44)	SOUTHWEST ALASKA (61)	ST. LAWRENCE ISLAND (83)	SEWARD PENINSULA (40)	KOTZEBUE SOUND (30)	VICTORIA ISLAND (30)	CORONATION GULF (55)	CORONATION GULF (82)	SMITH SOUND (3)
Measurements	Grant	Hrdlicka	Hrdlicka	Shapiro	Author	Author	Author	Jenness	Steensby
Head Length	193.5	192.9	193.3	195.3	192.50	194.13	195.71	195.9	196.25
Head Breadth	153.7	155.6	154.0	153.2	151.60	151.83	151.09	151.8	153.75
Cephalic Index	79.3	80.7	79.7	77.96	78.80	78.30	77.26	77.6	78.06
Face Height	125.3	126.7	126.8	126.9	127.73	125.20	127.72	128.9	125.26
Face Breadth	149.6	149.5	147.3	149.3	149.37	147.80	147.05	145.7	147.75
Facial Index	83.8	84.9	86.7	84.92	86.10	84.83	86.94	87.0	85.29
Cephalo-Facial Index	97.6	96.1	95.8	96.15	97.90	97.47	97.39	96.0	96.56
Stature	166.4	162.4	163.3	165.4	.....	.....	.....	164.8	167.4
Differences									
Head Length	193.5	—0.6	—0.2	1.8	—1.00	0.63	2.21	2.4	2.75
Head Breadth	153.7	1.9	0.3	—1.5	—2.10	—1.87	—1.61	—1.9	—0.95
Cephalic Index	79.3	1.4	0.4	—1.34	—0.70	—1.00	—2.04	—1.7	—1.24
Face Height	125.3	1.4	1.5	1.6	2.43	—0.10	2.42	1.6	—0.02
Face Breadth	149.6	—0.1	—2.3	—0.3	—1.23	—1.80	—2.55	—3.9	—1.85
Facial Index	83.8	1.1	2.9	1.12	2.30	1.03	2.14	3.2	1.49
Cephalo-Facial Index	97.6	—1.5	—2.0	0.55	0.30	—0.13	—0.31	—1.6	—1.04
Stature	166.4	—4.0	—3.1	—1.0	....	....	....	—1.6	0.00
Average Differences		1.50	1.59	1.15	1.44	0.94	1.90	2.24	2.39"

9: Seltzer--365
116, 141, 144, 174

(no date) 1933

Copper Eskimo

"TABLE 31

Comparison Between Means of Cree Indians at Fort Chipewyan and Hudson Bay Males

	CREE (Grant)	HUDSON BAY (Birket-Smith)	Diff.	
Head Length.....	193.2	193.7	0.5	
Head Breadth.....	150.0	149.7	—0.3	
Cephalic Index.....	77.6	77.3	—0.3	
Face Height.....	124.6	123.5	—1.1	Average
Face Breadth.....	144.6	143.4	—1.2	difference
Facial Index.....	86.1	86.0	—0.1	0.59
Cephalo-Facial Index....	96.6	95.8	—0.8	
Stature.....	161.0	160.6	—0.4"	

10: Hanbury--293 (1901-02) 1904 Copper Eskimo
116, 141

MEASUREMENTS OF ARCTIC COAST ESKIMO

Height.	Girth of Chest.	Forearm.	Arm, Shoulder to Finger Tips.	Leg from Hip.	Length of Hand.	Length of Foot.	Sex.
5 feet 3½ inches.	37 inches.	6½ inches.	25 inches.	33 inches.	7 inches.	10 inches.	Male.
5 " 5½ "	38 "	6⅝ "	25½ "	34½ "	8½ "	10 "	"
5 " 6½ "	38½ "	6⅝ "	27 "	32½ "	7 "	10½ "	"
5 " 5 "	39 "	6⅝ "	27 "	31½ "	7 "	10½ "	"
5 " 6½ "	38½ "	6⅝ "	29 "	34 "	7½ "	9½ "	"
5 " 1½ "	36 "	6½ "	27 "	33½ "	7 "	10 "	"
5 " 1 "	...	...	...	...	...	...	Female.
4 " 10½ "	...	...	...	...	...	...	"
4 " 10 "	...	...	...	...	...	...	"
5 " 1½ "	...	...	...	...	...	...	"
4 " 10½ "	...	...	...	...	...	...	"

Taken near Ogden Bay in May 1902.

11: Stefansson--194-195 (1908-1912) 1913 Copper Eskimo
116, 141

"It is, however, not only the blondness of the Victoria Islanders that suggests the European, but also the form of their heads, as shown by my measurements of adult males. Typically we think of the Eskimo as narrow of skull and wide of face; in other words, his face is wider than his head. This fact is scientifically expressed by a 'facial index' of over 100; while if the face is narrower than the head, the index will be less than 100. The proportions of the head are considered by most anthropologists an excellent test to determine what race a group of individuals belong to. In a summary published by the American Museum of Natural History, Professor Franz Boas gives the following facial indices for (supposedly) pure-blooded Eskimo: Herschel Island, 101; Greenland, 105; Baffin Bay, 102; Alaska, 104; East Greenland, 102; Smith Sound, [195] 102. In the same paper he gives the following indices for persons of mixed Eskimo and European descent: Labrador, 96; West Greenland, 95. My own measurements of one hundred and four men of Victoria give and index of 97, which places the 'Blond Eskimo,' when judged by head form, exactly where it places them when judged by complexion--in the class with persons who are known to be of mixed Eskimo and white descent."

12: Collinson--172-173 (1851-53) 1889 Copper Eskimo
116, 493, 224, 141

"On the 7th of November they [T. M: a group of natives] crossed the bay to the southward, and built their huts on that side, about three miles from the ship, mustering in all eight sledges. They visited [173] us on the 8th, and we tried to tempt them with saws and knives to part with some of their venison, but only succeeded in getting a small quantity for our dogs. They evidently had not been successful this season, and had nothing to spare. Some among the tribes were of very different features to the others, the face being oval and the nose aquiline. They numbered between forty-five and fifty all told, and had with them children of all ages."

"GENERAL DESCRIPTION OF THE CRANIA

'Eleven male and fifteen female crania were available for study, the others being so fragmentary that it was impossible to make any measurements on them. It was decided to compare the present series with the Eskimo crania in the Royal College of Surgeons Museum, London, and this proved a most profitable venture. At the same time the crania have been contrasted with those of various other races, very distant and divergent in type. In this way many facts of striking significance have been elicited. It was decided to discuss the results for the male and female crania separately as sex exerted strong influence upon the indices, particularly the orbital.

Some of the skulls had been bleached to an almost dazzling white colour from prolonged exposure to alternating periods of rain and sunshine during the summer months. The outer table of bone showed in many cases various degrees of erosion from the persistent effects of the above agencies. The characteristic keel-shape of the cranial vault in the line of the sagittal suture, which is a frequent feature of the Eskimo skull, was visible only in eight of the male crania. None of the female skulls exhibited it."

25: Cameron--39 [2] (1913-18) 1923 Copper Eskimo
116, 141

"The mastoid processes and other points of muscle attachment, such as the occipital curved lines, crest and protuberance, were strongly developed in the male crania, showing that the individuals had led very active lives. The great feature of the Eskimo skull, however, is the extent of the areas of attachment of the masticatory group of muscles. Thus the temporal lines were well marked and situated high up on the sides of the cranium, in this way reducing the stephano-zygomatic index very markedly in some of the crania. For example the latter index fell to 58.1 in one male skull and to 64.5 in one female cranium. These represent the lowest ebb for this index, so far as the writer can ascertain."

The zygomatic arches of the Eskimo skull form obstrusive bars of bone for attachment of their powerful masseteric muscles. The lateral projection of these arches constitute a striking feature of the skull when it is examined from below. The result is that the spaces that are left for the passage downwards of the temporal muscles are amazingly large (see Fig. 4), thus indicating that these muscles must attain to a very robust degree of development. The writer conceived the idea of taking measurements of the lower end of the temporal fossa, that is to say from the inner surface of the zygoma to the infra-temporal crest on the great wing of the sphenoid. This gap proved to be as much as 29mm. in one male skull and 27 mm. in one female skull, these distances being far greater than in the average type of European cranium and likewise greater than in two low grade Melanesian skulls recorded by the writer, (4) where the corresponding

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Nova Scotia Institute of Science, Vol. 14, Part 4, Halifax, 1918.

dimensions proved to be 25. 5mm. It was therefore evident that the temporal muscles must have been massively developed in order to fill up these unusually wide spaces. Again, the external pterygoid plates were exceptionally wide--as much as 20 mm. in

one female skull (XIV F-16), while the tuberosity of the palate bone exhibited a greater degree of prominence than usual, bothfacts indicating of course that the external and internal pterygoid muscles were strongly developed and vigorous in their actions. In many cases the posterior border of the external pterygoid plate was pulled backwards into slender prolongations, produced obviously by the persistent traction of the external pterygoid muscle. The abnormal size of the external pterygoid plates of the Eskimo skull, together with their significance has been already pointed out by Brierley and Parsons. (2).

2. Brierley, J., and Parsons, F.G. Notes on a Collection of Ancient Eskimo Skulls. Journal of the Royal Anthropological Institute, Vol. XXXVI, London, 1906."

25: Cameron--40 (1913-18) 1923 Copper Eskimo
116, 141

"The zygomatic arches displayed some points of interest. Their architecture was more massive when compared with the average European male or female type. They were, moreover, more markedly curved outwards. The writer was, however, much impressed by the relatively feeble degree of development of the tubercle at the root of the zygoma for the attachment of the external lateral ligament of the lower jaw. This tubercle was so poorly developed in all thirty skulls that were available for its study, that the writer was inclinde to believe it to constitute a definite racial character, which would certainly indicate a comparatively feeble degree of development of the external lateral ligament of the lower jaw. The latter band is a strongly pronounced structure in the Anglo-Saxon race, where it is associated with a correspondingly prominent tubercle. The zygomatic arch, owing to its marked projection, presented an unusually extensive lower border and inner surface for the origin of the powerful masseter muscle. The buttress of bone projecting from the superior maxilla for the support of the anterior end of the zygoma was very prominently displayed, no doubt to resist the strong downward pull of the masseter muscle upon the zygomatic arch during mastication (see Plate 2)."

"The glenoid fossae were remarkably shallow, and were thus in marked contrast to the depth found in the average type of Anglo-Saxon skull. This condition has been already emphasized by Knowles. (14) This observer rightly pointed out that this shallowness was

14. Knowles, Sir Francis H.S. The Glenoid Fossa in the Skull of the Eskimo. Geological Survey of Canada, Museum Bulletin No. 9, Anthropological Series No. 4. Ottawa, 1915.

due to the free lateral movements of the molar groups of teeth in masticating tough uncooked food. Indeed, it is probable that the shallowness of the glenoid fossae and the almost total abolition of the tubercle at the root of the zygoma, recorded in the preceding paragraph, may be concomitant phenomena, for it is evident that the capsule of the temporo-mandibular joint of the Eskimo skull would have to be very lax to admit of his vigorous trituration movements. In the Anglo-Saxon race, on the other hand, we meet with a totally different type of mastication (associated with well-cooked food and social convention) which has resulted in a certain degree of limitation in the movements of the mandibular condyles, due to strongly developed external lateral ligaments and a deep glenoid fossa."

"The lambdoidal and the posterior halves of the sagittal sutures exhibited as a rule a considerable degree of complexity and tortuosity. Wormian bones of an irregular type were frequent along the line of the lambdoidal suture, including two large triangular ones, symmetrical in shape and arrangement, in the case of cranium XIV F-24. These evidently represented portions of the inter-parietal bone (see Plate 8).

The crania exhibited no grooves for the supra-orbital vessels and nerves, which according to the researches of Dixon, (9) are rather rare in the Eskimo skull. Strangely

9. Dixon, A.F. Journal of Anatomy and Physiology, Vol. XXXVIII, London.

enough, an Eskimo cranium in the possession of the writer, that came from Southampton island, Hudson bay, exhibits these grooves in the most marked degree. There were no metopic sutures and no fronto-squamous articulations.

The upper portions of the occipital bones exhibited a pronounced backward bulging so that the most posterior points of the crania were about midway between the lambda and the inion. There was nothing special to record regarding the thickness of the cranial wall.

The frontal, ethmoidal and sphenoidal sinuses were well developed, while the capacity of the maxillary antrum was certainly greater than in the European type of skull."

"The foramina for emissary veins exhibited the usual vagaries of position and occurrence, as in the European skull.

The facial portions of the crania exhibited the broad flattened appearance so characteristic of the Eskimo, with prominently developed malar bones. It is of interest to compare the latter with those of the European type of skull, in which they are directed for the most part outwards. In these Eskimo crania, [41] on the other hand, they looked much more in a forward direction, and thus assisted in imparting the broadened appearance to the face. The flattened norma frontalis was, however, due in great measure also to the shallow character of the canine fassae of the superior maxillae, the result, of which was to cause the infraorbital foramina to look as much forwards as downwards (see Plate 2).

The malar bones appeared to be relatively larger than in the Anglo-Saxon type of skull. The tubercles on their posterior borders for the attachment of the temporal fasciae were much exaggerated, and presented the appearance of having been deliberately pulled backwards into salient projections by the traction of the above fasciae (see Plate 3)."

25: Cameron--41 (1913-18) 1923 Copper Eskimo
116, 141

"The superior maxillae were relatively larger than in the Anglo-Saxon type of skull and their facial surfaces were both broader and flatter. The buttress of bone that extends downwards externally towards the first molar tooth was most pronounced, and imparted to the face an appearance of breadth and massiveness. Another striking effect was produced by the ridges due to the sockets for the canine teeth, for these in the majority of cases were continuous with the outer margins of the nasal aperture (see Plate 2.)

In the Anglo-Saxon type of skull they are directed upwards and outwards external to this as a rule. The infraorbital suture connecting the floor of the orbit with the infraorbital canal was frequently present. This appears to be a feature of the Eskimo cranium.

The striking feature of the facial portion of the Eskimo cranium is the extreme reduction in the width of the nasal aperture. The latter exhibited a mimimum of 20 mm. in both the male and female crania. As a result, the nasal bones were also remarkably narrow, and indeed possessed only about half the width of those of the European type of skull. For example the distance between the outer borders of the nasal bones at their junctions with the frontal measured across the curve, was as short as 4 mm. in an adult male skull, whereas in the Anglo-Saxon type of skull the distance was found as a rule to be more than twice this amount. The extreme narrowness of the nasal bones was certainly a very pronounced feature of the crania (see Plate 2)."

"Subnasal prognathism was manifested by nine of the female crania, and accounted entirely for the high alveolar index of cranium XIV F-33B. This condition was exhibited only in two of the male crania, and that in a minor degree.

One remarkable feature shown by the crania was, that the nasal septum was situated in the mesial plane, and displayed no deflection whatever except in one skull. This is surely an indication of the correct use that the Eskimos make of their nasal fossae, as the proper channels for normal respiration.

A peculiar notching of the posterior edge of the foramen magnum is described as a frequent feature of the Eskimo skull. It was noted that ten of the crania displayed this condition."

"The Cranial Capacity

This was measured in the usual way by means of small lead shot. The writer was greatly suprised at the results, which were in every instance well below the Eskimo average of 1546 c. cm. For example, the maximum capacity amongst the male crania was only 1450 c. cm. while the minimum reached the low level of 1290 c. cm. The female series was correspondingly bad--the highest capacity being 1340 c. cm.--an excessively low ebb. On comparing these results with the capacities of the Eskimo crania in the Royal College of Surgeons Museum (11) it was ascertained that the maximum and minimum

11. Flower, Sir William. Catalogue of the Royal College of Surgeon's Museum, 2nd Edition. London, 1907.

capacities of the male skulls in that collection were respectively 1730 and 1230 c. cm., and the maximum and minimum for the female crania 1510 and 1230 [42] c. cm.--a truly astounding comparison. One suggested explanation is that the crania of the latter collection were all from the Greenland area, and it may be that this Eskimo community possess a greater cranial capacity than that of the Central and Western Eskimos. To make matters worse, only four of the male crania went above 1400 c. cm., while only three of the female crania exceeded the 1300 level. The average for the whole collection

compared unfavourably with the capacities of two low grade Melanesian skulls recorded by the writer (4) (1368 and 1395 c. cm.) and was certainly much below the capacity of a North American Indian skull (1495 c. cm.) recently reported by the writer. (1)

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Nova Scotia Institute of Science, Vol. 14, Part 4, Halifax, 1918.

1. Berry, J.A., and Robertson, A.W.D. The Place in Nature of the Tasmanian Aboriginal. Proceedings of the Royal Society of Edinburgh, Vols. 31 and 34, 1910 and 1913."

"The Cranial Length

In the whole series the most posterior point of the skull was about midway between the lambda and the inion. The maximum and minimum lengths for the male crania were 196 and 178 mm., while the corresponding figures for the male Eskimo skulls of the R.C.S. Museum (11) were 208 and 175 mm. The maximum and minimum lengths for the

11. Flower, Sir William. Catalogue of the Royal College of Surgeon's Museum, 2nd Edition. London, 1907.

female crania were 186 and 166.5 mm. as compared with 190 and 169 mm. for the female Eskimo skulls of the R.C.S. Museum. The average for the male crania practically accorded with the average for 117 male Scottish skulls found by Turner (17) to be 186.6 mm.

17. Turner, Sir William. A Contribution to the Craniology of the People of Scotland. Transactions of the Royal Society of Edinburgh, Vol. 41, Part 3, 1903.

The Eskimo tends to be long-headed and it is therefore of interest to compare the above

cranial lengths with these of two very dolichocephalic Melanesian skulls (190 and 199 mm.) (4).

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Nova Scotia Institute of Science, Vol. 14, Part4, Halifax, 1918."

"The Maximum Cranial Breadth

This was measured over the parietal bones. It is essential to mention this fact, as a greater breadth was generally obtained over the temporals. The maximum and minimum for the male crania were 143 and 127 mm. which practically coincided with the figures for the male Eskimo skulls of the R. C. S. Museum (143 and 125 mm.) (11) The corresponding

11. Flower, Sir William. Catalogue of the Royal College of Surgeon's Museum, 2nd Edition. London, 1907.

results for the female crania were 138 and 120. 5 mm.

The maximum breadth of the male crania was much below the average for 114 male Scottish skulls, (17) but on the other hand was much greater than that of the two

17. Turner, Sir William. A Contribution to the Craniology of the People of Scotland. Transactions of the Royal Society of Edinburgh, Vol. 41, Part 3, 1903.

dolichocephalic Melanesian skulls referred to above (122 and 128 mm.) (4)

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Institute of Science, Vol. 14, Part 4, Halifax, 1918."

"The Cephalic Index

This index varied from a maximum of 76.5 to a minimum of 67.9 in the case of the male crania and from 75.8 to 69.9 in the female. Thus practically all the skulls of both sexes belonged to the dolichocephalic class. The range of variation of this index was not so pronounced as in the Eskimo collection of the R.C.S. Museum (11) where it

11. Flower, Sir William. Catalogue of the Royal College of Surgeon's Museum, 2nd Edition. London. 1907.

was found to fluctuate between 78.7 and 66.1 --truly an extensive range. This all goes to exemplify the wide racial range of variation that characterises this index. Still, the general fact remains that the Eskimo skull is as a rule dolichocephalic, which is in marked contrast to the condition that prevails in the average Mongolian type of skull, since the latter tends to be located in the brachycepahlic or broadheaded class. Therefore it is evident if the Eskimos do possess a Mongolian ancestry, then this must have been in byegone ages, in order to permit a lengthy period of segregation from his kinsmen, sufficient for ensuring the evolution of his own specialized form of skull. It is of interest therefore to compare his cephalic index with that of a Mongoloid type like the North American Indian, in whom, amongst the more westerly located tribes at any rate,

according to Hrdlicka's map, (20) [43] the broad headed type used to be fairly prominent.

20. Hrdlicka, A. Physical Anthropology of the Lenapes of Delawares and of the Eastern Indians in General. Bulletin 62, Bureau of American Ethnology, Washington, 1915.

The North American Indians of Canada and Newfoundland would of course be the Eskimos' nearest neighbours, but unfortunately an insufficient number of these crania has been examined to inform us definitely what the cephalic index of the aborigines of Canada actually was. However, it may be noted that the cephalic index of a Micmac Indian skull recently recorded by the writer (5) was 80.8, while Prest (15) many years ago reported

5. Cameron, J. A Craniometric Study of the Micmac Skull in the Provincial Museum of Nova Scotia. Transactions of the Nova Scotia Institute of Science, Vol. 15, Part 1, Halifax, 1919.

15. Prest, W.H. Measurements of Two Beothuck Skulls in the Museum, St. Johns, Newfoundland. Proceedings of the Novia Scotia Institute of Science, Vol. 9, Part 3. Halifax, 1897.

the indices of two aboriginal Beothuck skulls from Newfoundland as 78.4 and 80.2. It is clear that these isolated examples, at any rate, demonstrate a wide gulf between the North American Indian and the average Eskimo type of cephalic index."

"It is interesting to compare the cephalic index of these Eskimo crania with that of the two Melanesian skulls already referred to. (4) In these it had sunk to the low figure of

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Institute of Science, Vol. 14, Part4, Halifax, 1918."

64. This leads one to mention that in the negro races, including those with the most primitive cerebal organizations, dolichocephaly is certainly the predominant type. Moreover, it is the condition found in some of the extinct races of mankind such as Neanderthal man (cephalic index 73.9) (16) and Cromagnon man (cephalic index 73.3) (13)

16. Schwalbe, G. Der Neanderthalschädel. Bonner Jahrbücher, Heft 106, 1901.

13. Klaatsch, H. Die Fortschritte der Lehre von den fossilen Knochenresten des Menschen in den Jahren 1900-1903. Ergebnisse der Anatomie und Entwickelungsgeschichte, Vol. 12, 1903.

In spite of these observations it is essential to mention that the cephalic index taken by itself is no standard of intellectual omniscience. Thus the average cephalic index for the Anglo-Saxon race is 76.1, which is therefore just above the dolichocephalic class."

25: Cameron--43 [2] (1913-18) 1923 Copper Eskimo
116, 141

"The Index of Cranial Height

The maximum and minimum for this index were found to be 76.9 and 69 in the case of the male crania and 78.5 and 68.4 in the female crania. The average was about the same as that for the Eskimo collection in the R.C.S. Museum (11) which was estimated by

11. Flower, Sir William. Catalogue of the Royal College of Surgeon's Museum, 2nd Edition. London. 1907.

Flower to be 73.7. Therefore, it is evident that this index closely follows the cephalic index, the obvious inference being that races which are long-headed are also low-headed. As an extreme illustration of this fact the writer would again like to cite the two extremely dolichocephalic Melanesian skulls, (4) where the corresponding indices of cranial

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Institute of Science, Vol. 14, Part 4, Halifax, 1918.

height reached the consistently low levels of 68 and 65."

25: Cameron--43 [3] (1913-18) 1923 Copper Eskimo
116, 141

"The Breadth-Height Index

It is surprising to note how little this cranial index has been exploited by anthropologists. In the male crania this index was found to fluctuate between 109.3 and 94.5, and in the female crania from 103.8 to 93.4, with an average of well over 100, particularly in the male series. This meant of course that the height was a little greater than the maximum breadth. Turner (17) pointed out some years ago that in a dolichocephalic

17. Turner, Sir William. A Contribution to the Craniology of the People of Scotland. Transactions of the Royal Society of Edinburgh, Vol. 41, Part 3, 1903.

skull the height was usually a little greater than the maximum breadth. That fact was certainly exemplified in this series of crania. It may be added that the converse usually holds true for brachycephalic skulls, and was well exemplified in a Micmac North American Indian skull recently described by the writer, (5) where the height was found to be

5. Cameron, J. A Craniometric Study of the Micmac Skull in the Provincial Museum of Nova Scotia. Transactions of the Nova Scotia Institute of Science, Vol. 15, Part 1, Halifax, 1919.

decidedly less than the breadth (with an index of 90.5)."

"The Alveolar or Gnathic Index

"This important index was found to vary from 93.3 to 100 in the male crania and from 88.9 to 107.4 in the female series, the latter fluctuations being most unusual. It may be again noted, nowever, that prognathism did not exist at all in the male crania, and, moreover, was entirely of the subnasal variety in the female crania that exhibited it (nine in number). It may be observed that some of the crania were remarkably orthognathous. It is evident, however, [44] that the alveolar index varies greatly in the Eskimo race, for Flower (11) records a male skull with an index as high as 107, and another

11. Flower, Sir William. Catalogue of the Royal College of Surgeon's Museum, 2nd Edition. London. 1907.

as low as 94. This observer gave the Eskimo average (for 24 unsexed skulls) as 100.6, thus placing the race in the mesognathous group. It may prove of interest to note further that Flower (11) found the average Mongolian index (for 17 Chinese skulls) to be 99, which approximated closely to the Eskimo average. For purposes of comparison it is worthy of mention that the Anglo-Saxon average index as given by Flower, is 95.6. (11)"

"The Nasal Index

The narrowness of the anterior nasal aperture of the Eskimo skull is one of its most salient features, the width in the present series varying from 20 to 27 mm. in the female crania and from 20 to 26 mm. in the male crania. As a result the nasal index is usually low, the maximum and minimum being 52.9 and 36.4 for the female skulls, and 47.2 and 35.9 in the male series. The female cranium that recorded the index of 52.9 must be regarded as most exceptional, as no other skull exhibited an index higher than 47. Even then, the average for the whole series was practically the same as that given by Flower for the Eskimo collection in the R.C.S Museum, viz., 43.7. The crania were thus leptorrhine, and made a striking comparison with a Melanesian skull, where this index was found by the writer (4) to be 54.9, indicating, of course, that the nasal aperture of

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Institute of Science, Vol. 15, Part 1, Halifax, 1919.

the skull was comparatively wide in the negro races. It is also interesting to compare the nasal index of the present specimens with that of the Mongolian (Chinese) type of skull, the average index for which was given by Flower (11) as 49.8. It is, therefore,

11. Flower, Sir William. Catalogue of the Royal College of Surgeon's Museum, 2nd Edition. London. 1907.

evident that if the Eskimo did possess a Mongolian ancestry, then he has developed during the ages a very specialized form of nasal aperture. This is probably a provision of nature for a special type of respiration, associated with the inhalation of air reduced to a very low temperature. The converse certainly seems to be true, for the natural habitat of the negro, with his much widened cranial nasal aperture, is in a warm climate. It would thus prove an interesting investigation to ascertain whether his migration to more temperate zones is appreciably affecting his nasal width. Perhaps it is worthy of mention that the average nasal index for the Anglo-Saxon race is 46, which is comparatively low, the suggestive comment in this case being, that the race has become habituated to a climate, which is bleak and cold at certain seasons of the year, not only in the British Isles, but also in our Canadian latitudes."

"The Nasion-Prosthion Height Index

This is a new index which has suggested itself to the writer. He can certainly find no reference to its previous use by anthropologists. The idea involved in its application is to compare the nasal width with the nasion-prosthion height. Of course, it could not possibly displace the very trustworthy nasal index, but it might be utilized as a supplement to the latter, which it follows more or less consistently. Thus the minimum and maximum for the male skulls were 22.4 and 36.2, with an average of 29.4, and for the female skulls 26.5 and 38.7, with an average of 31.2.

The Orbital Index

This has been found to be a rather variable and uncertain index throughout modern Hominidae, but it may be noted that the unsatisfactory results yielded by it are due, in some measure at least, to the circumstances that the important factors of age and sex were not excluded in the investigations. There can be no doubt that the orbital contour is different in early life from what it is in the [45] adult, and it also exhibits a difference in male and female crania of the same race, the index being somewhat higher in the latter sex. If these two factors be rigorously excluded then the index will be found to display a few consistent features. For instance, it is persistently high in all the Mongoloid races, and is lowest in the negro, with the European races occupying an intermediate position. It was, therefore, not surprising to find that the orbital index in these

crania was high, recording an average of 92 in the female and 88 in the male series, thus betraying a Mongoloid affinity. As a comparison with this it was noted that the average for 24 unsexed Eskimo skulls in the R.C.S. Museum (11) was 89, thus placing

11. Flower, Sir William. Catalogue of the Royal College of Surgeon's Museum, 2nd Edition. London, 1907.

the race definitely in the megaseme category. In contrast with this, the average for 208 European crania, as given in the catalogue of the R.C.S. Museum (11) was 87, which located them in the mesoseme group. Compare these again with the index in a Micmac North American Indian skull, recently recorded by the author as 88, (5) with the

5. Cameron, J. A Craniometric Study of the Micmac Skull in the Provincial Museum of Nova Scotia. Transactions of the Nova Scotia Institute of Science, Vol. 15, Part 1, Halifax, 1919.

Mongolian (Chinese) average of 89, (11) and with the Polynesian average of 91. (10). It is

therefore, evident that the height of the orbital aperture is consistently greater in the Mongoloid races than in the European.

The writer has recently shown (8) that 'the generalized form of orbital aperture in the

8. Cameron, J. Contour of the Orbital Aperture in Modern and Fossil Man. American Journal of Physical Anthropology, Vol. 3, No. 4, Menasha, Wisconsin, 1921.

adult male skull of modern races is represented by a quadrangular contour, individual variations of outline depending upon the degree of 'rounding off' of the four angles.'"

25: Cameron--45 (1913-18) 1923 Copper Eskimo
116, 141

"The Maxillo-Facial Index

Long-headed races are also long-faced as a rule. That is to say, the maxillo-facial height is more than half the interzygomatic breadth. This series of crania closely adhered to the above rule. For example this index was over 50 in all the male crania, with a maximum of 60.8. In the female crania only two indices sank below 50, and the maximum was 59.7. This conclusion is of interest when compared with the Mongolian type of skull which is usually both brachycephalic and brachyfacial. Again, the brachycephalic skull of a North American Indian (Micmac tribe) (5) was also found to be brachyfacial,

5. Cameron, J. A Craniometric Study of the Micmac Skull in the Provincial Museum of Nova Scotia. Transactions of the Nova Scotia Institute of Science. Vol. 15, Part 1, Halifax, 1919.

so that it consistently followed the Mongoloid type. The striking fact about this index in the Eskimo therefore is, that though he gives one the impression of being broad-faced in the living condition, his skull is really dolicho-facial."

"The Stephano-Zygomatic Index

This index provided a great surprise in these crania. For example, Duckworth (10)

10. Duckworth, L. W. H. Morphology and Anthropology. Cambridge, 1904.

states that the Eskimo skull is cryptozygous. Of the present collection all were phaenozygous, some being excessively so--one male cranium registering an index as low as 58.1. The maximum for this index was 71.6 in the male series and 79.7 in the female group. These results provided a most striking comparison with the European type of cranium which usually registers an index in the vicinity of 90. During a recent study of two low grade Melanesian skulls from the New Hebrides, the wrtier considered that he had reached the lowest ebb for this index (4) with the figures 71 and 73. It was, therefore,

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Institute of Science, Vol. 14, Part 4, Halifax, 1918.

all the more surprising to find that half the skulls of this Eskimo series were under these

low levels. Yet, after all, one need not be unduly amazed at these results, for it has been already pointed out how highly placed on the sides of these skulls the temporal lines were found to be. In a race like the Eskimos, accustomed as they are to a most vigorous indeed, almost violent type of mastication, one certainly meets with conditions calculated to reduce the stephano-zygomatic index to the most marked degree. As a result it will evidently be necessary to reconsider our present views regarding this cranial index in the Eskimo race. [46]

In passing, it is interesting to watch the reduction of this index to zero in the anthropoid apes. In the gorilla for example, it is non-existent owing to the fusion of the temporal lines in the mesial plane of the cranial vault to form the prominent crest along the line of the sagittal suture that is so pronounced in this animal."

25: Cameron--46 (1913-18) 1923 Copper Eskimo
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"The Gonio-Zygomatic Index

This is an index that has been very little exploited by anthropologists, and therefore the data regarding it are rather scanty. The idea involved in its application is to compare the width between the angles of the mandible with the inter-zygomatic breadth. It may be noted that the Eskimo skull furnishes the highest known average for this index amongst modern Hominidae, and Duckworth (10) gives the average for the race as 82.5.

10. Duckworth, L. W. H. Morphology and Anthropology. Cambridge. 1904.

The average for these crania was 82.8 which practically accorded with the above result. It is worthy of mention that in only one skull did the index fall below 80, while the maximum was represented by 88.2."

"The Fronto-Parietal Index

This cranial index has been applied chiefly to the calvaria of fossil man, and has not been elaborated much in reference to the crania of modern Hominidae. Indeed, the writer appears to be the only observer who has utilized it to any large extent (4 5 & 6),

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Institute of Science, Vol. 14, Part4, Halifax, 1918.

5. Cameron, J. A Craniometric Study of the Micmac Skull in the Provincial Museum of Nova Scotia. Transactions of the Nova Scotia Institute of Science. Vol. 15, Part 1, Halifax, 1919.

6. Cameron, J. A Contribution to the Evolution and Morphology of the Human Skull. Transactions of the Royal Society of Canada, Series 3, Vol. 12, Ottawa, 1918.

though it is possible he may stand correction on that point. The index varied from 77.1 to 66.4 in the male crania, and from 75 to 67.9 in the female. Thus in one male skull

the minimum post-orbital diameter was only 66.4 p.c. of the maximum parietal breadth. One will appreciate how low an ebb this is, upon recollecting that the corresponding index for such a lowly evolved type as the Java clavaria (Pithecanthropus erectus) is 65.4. (13)

13. Klaatsch, H. Die Fortschritte der Lehre von den fossilen Knochenresten des Menschen in den Jahren 1900-1903. Ergebnisse der Anatomie und Entwickelungsgeschichte, Vol. 12, 1903.

This remarkable post-orbital constriction is quite a feature of the Java calvaria, as well as of the crania of the anthropoid apes, when examined from above. Again, it was noted that ten of the female crania and six of the male crania possessed fronto-parietal indices of a lower grade than that of the primitive type of skull represented by Neanderthal man. To carry the comparison further it was ascertained that many of these Eskimo skulls compared unfavourably with the Melanesian type in regard to their fronto-parietal indices thus bringing them down to the level of one of the lowest types of living mankind."

25: Cameron--46 [3] (1913-18) 1923 Copper Eskimo
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"On studying the crania of the higher types of modern Hominidae from above, it is found that there is a progressive attempt to fill out the general contour and more particularly to obliterate the post-orbital constriction as much as possible. The result is a gradual improvement in the fronto-parietal index which in the European type of skull approximates to 90.

There must be some subtle cause for the creation of this low fronto-parietal index, which places the Eskimo skull, in other respects a well-developed one, in a comparatively lowly position amongst modern Hominidae. The suggestion the writer would like to offer is that the Eskimo, owing to his characteristic dietary, has to commence his strenous masticatory habits at an early stage in life. The result is, that his skull becomes compressed laterally by his powerfully developed temporal muscles, while still in the pliable condition of childhood. The effect of this would be to create a marked post-orbital constriction, and this would provide the essential element for the reduction of his fronto-parietal index."

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"The Index of Height of the Bregma above the Glabella-Inion Line

Owing to the fact that the crania could not be sectioned in the mesial plane, the three basal angles and the calvarial height index could not be calculated. As a substitute for the latter the writer devised the index which forms the subject of this paragraph. In estimating it, the perpendicular height of the bregma above the glabella-inion line was compared with the length of the latter. The glabella-inion length for each skull was first of all measured off on paper. The glabella-bregma and inion-bregma chords were then measured off with drawing compasses and of course the point of meeting of these chords gave the position of the bregma. A perpendicular line dropped from the latter on to the glabella-inion line then gave the bregmatic height drawn to scale. Its length was estimated, multiplied by a hundred, and divided by the glabella-inion length. The bregmatic height would of course be a little less than the calvarial height, and therefore it was not surprising to find that in this index the results, with one exception, were all under 50. The index of calvarial height, on the other hand, is always well over 50 in the higher races of modern mankind. In these Eskimo crania the bregmatic height index varied from 52.2 to 44.7 in the males and from 48.5 to 43.7 in the females. It will thus be observed that this index displays a very moderate degree of racial variation, when compared with the vagaries of some of the cranial indices.

It may be noted here that the height of the bregma above the glabella-inion line ranged from 92.3 mm. to 80.3 mm. in the male crania and from 87.5 mm. to 70 mm. in the female."

25: Cameron--47 [2] (1913-18) 1923 Copper Eskimo
116, 141

"The Bregmatic Angle

This angular cranial measurement has only come into its own within recent years as a factor of prime importance and significance in craniology. It is utilised to demonstrate the degree of expansion of the frontal cranial arc. One usually finds the briefest descriptions in the textbooks regarding its exact method of application, and indeed, it appears to have been mainly used in the study of the calvaria of fossil man. Schwalbe (16)

16. Schwalbe, G. Der Neanderthalschädel. Bonner Jahrbücher, Heft 106, 1901.

was one of the pioneers in its utilization and took full advantage of its value in his classic duty of the Neanderthal calvaria. For the present research his plan of procedure was adopted, this being the angle included between the glabella-bergma and the glabella-inion lines."

In these Eskimo crania the bregmatic angle varied from 58.5° to 53.5° in the males and from 60° to 51.5° in the females. The male crania were thus within the range of variation for modern Hominidae, which is given by Duckworth (10) as from 66° to 53°,

10. Duckworth, L. W. H. Morphology and Anthropology. Cambridge. 1904.

while the female series sank slightly below this. It would thus be interesting to note the effect of sex upon this angle. The average of the bregmatic angle was 55.5° for the male crania and 54.2° for the female crania. The writer was surprised to find that the general average of these was practically the same as that found by Berry and Robertson (1) in a series of one hundred aboriginal Australian skulls, namely 54.7°, and slightly

1. Berry, J. A., and Robertson, A. W. D. The Place in Nature of the Tasmanian Aboriginal. Proceedings of the Royal Society of Edinburgh, Vols. 31 and 34, 1910 and 1913.

lower than the average obtained by the same observers in forty-five aboriginal Tasmanian skulls (namely 56°). Moreover, the average for these Eskimo skulls compared unfavourably with the results obtained by the writer (4) in two low type Melanesian skulls

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Institute of Science, Vol. 14, Part 4, Halifax 1918.

(55° and 59°), and also with that of a Micmac North American Indian skull (60°) recently recorded by the writer. (5) Indeed the Eskimo average was comparable to that of a

5. Cameron, J. A Craniometric Study of the Micmac Skull in the Provincial Museum of Nova Scotia. Transactions of the Nova Scotia Institute of Science. Vol. 15, Part 1, Halifax, 1919.

fossil type like the Cro-magnon (13) cranium (with a bregmatic angle of 54°).

13. Klaatsch, H. Die Fortschritte der Lehre von den fossilen Knochenresten des Menschen in den Jahren 1900-1903. Ergebnisse der Anatomie und Entwickelungsgeschichte, Vol. 12, 1903."

25: Cameron--48
116, 141

(1913-18) 1923

Copper Eskimo

"The Palato-Maxillary Index

This index displayed a vast range of variation in these crania--from 132.1 to 105.8 in the male, and from 133.3 to 113.5 in the female. It is therefore clear that, if one adopts Turner's (18) classification, it will be noted that the male crania exhibited all the phases

18. Turner, Sir William. Report on the Bones of the Human Skeleton. Challenger Reports, Vol. 16, Part 47. London, 1886.

from an extreme brachyuranic to an extreme dolichouranic condition, while the female skulls ranged from an extreme brachyuranic to a mesuranic condition. This index certainly requires a little further exploiting in all races of mankind before its significance can be fully appreciated. However, all that can be stated with certainty at present is, that it appears to possess an amazing range of variation even in the higher races, for Turner (17) found the extreme limits of its fluctuations in his extensive series of Scottish

17. Turner, Sir William. A Contribution to the Craniology of the People of Scotland. Transactions of the Royal Society of Edinburgh. Vol. 41, Part 3, 1903.

crania."

25: Cameron--48 [2] (1913-18) 1923 Copper Eskimo
116, 141

"The Cranial Chords

The writer, with the literature at his disposal, can find no record of the cranial chords having been previously measured in the Eskimo skull, so that it will be of interest to study these in this race and compare them with the corresponding measurements for other races.

As the crania could not be sectioned mesially, it was impossible to calculate the important cranial curvatures."

25: Cameron--48 [3] (1913-18) 1923 Copper Eskimo-1-2
116, 141

"The Glabella-Bregma Chord

This cranial chord varied from 111.5 mm. to a minimum of 97 mm. in the male crania and from 109.5 mm. to 88mm. in the female series. The male and female averages proved to be 106.7 and 101.5 mm. These are well below the average of 112.5 mm. for the European type of skull, as given by Berry and Robertson, (1) and are almost comparable

1. Berry, J. A., and Robertson, A. W. D. The Place in Nature of the Tasmanian Aboriginal. Proceedings of the Royal Society of Edinburgh. Vols. 31 and 34, 1910 and 1913.

to the average (105.2 mm.) for the aboriginal Tasmanian unsexed skull as given by Büchner (3) and certainly below the average of 108 mm. for the aboriginal Australian

3. Buchner, L. W. G. A Study of the Aboriginal Tasmanian Cranium. Proceedings of the Royal Society of Edinburgh, Vol. 34, 1913-1914.

skull (unsexed), furnished by the same observer. These results may be further compared with 108 mm. in the Neanderthal type of skull, (16) 93 mm. in Pithecanthropus, (13)

16. Schwalbe, G. Der Neanderthalschädel. Bonner Jahrbücher, Heft 106, 1901.

13. Klaatsch, H. Die Fortschritte der Lehre von den fossilen Knochenresten des Menschen in den Jahren 1900-1903. Ergebnisse der Anatomie und Entwickelungsgeschichte, Vol. 12, 1903.

and 87 mm. in the Anthropoid ape. The writer was much struck by the length of the glabella-bregma chords in two low grade Melanesian skulls recently described by him (111.5 and 113.5 mm.) (4)

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Institute of Science, Vol. 14, Part4, Halifax 1918."

"The Glabella-Lambda Chord

The writer can find few recorded measurements of this chord which may, however, prove to become a factor of some significance in craniometry. He therefore decided to publish the results of his calculations, in the hope that they may be of service as a means of comparison with other racial types. This cranial chord varied from 186 to 170.5 mm. in the male skulls, with an average of 178.6 mm., and in the female series from 178 to 156 mm., with an average of 169.8 mm. It is, therefore, evident that it displayed the racial range of variation which is characteristic of all cranial indices and measurements. These Eskimo averages could be compared with that (178.6 mm.) for one hundred aboriginal Australian crania (unsexed) and with that (173.2 mm.) for forty-eight aboriginal Tasmanian skulls (unsexed). (3) A further comparison might be made with the Neanderthal

3. Buchner, L.W.G. A Study of the Aboriginal Tasmanian Cranium. Proceedings of the Royal Society of Edinburgh, Vol. 34, 1913-1914.

type of skull (185.3 mm.) (16) and with Pithecanthropus (171 mm.) (13).

16. Schwalbe, G. Der Neanderthalschädel. Bonner Jahrbücher, Heft 106, 1901.

13. Klaatsch, H. Die Fortschritte der Lehre von den fossilen Knochenresten des Menschen in den Jahren 1900-1903. Ergebnisse der Anatomie und Entwickelungsgeschichte, Vol. 12, 1903."

25: Cameron--49 (1913-18) 1923 Copper Eskimo
116, 141

"The Bregma-Lambda Chord

This cranial chord fluctuated between a maximum of 114.5 mm. and a minimum of 104 mm. in the male skulls with an average of 108.7 mm. In the female series the range of variation was from 118 mm. to 94 mm. with an average of 104.4 mm.

This chord thus consistently followed the glabella-bregma chord, in being well below the European average of 112 mm. (as given by Büchner) (3) and also lower than the

3. Buchner, LW. G. A Study of the Aboriginal Tasmanian Cranium. Proceedings of the Royal Society of Edinburgh, Vol. 34, 1913-1914.

averages for aboriginal Australian and Tasmanian crania (114.7 and 113 mm.) as calculated by the same observer. These Eskimo crania may likewise be compared with the average for the Neanderthal type of skull (112 mm.) (16) and with Pithecanthropus (93 mm.) (13)

16. Schwalbe, G. Der Neanderthalschädel. Bonner Jahrbücher, Heft 106, 1901.

13. Klaatsch, H. Die Fortschritte der Lehre von den fossilen Knochenresten des Menschen in den Hahren 1900-1903. Ergebnisse der Anatomie und Entwickelungsgeschichte, Vol. 12, 1903."

25: Cameron--49 [2] (1913-18) 1923 Copper Eskimo
116, 141

"The Bregma-Inion Chord

So far as the writer can ascertain, no previous measurements of this chord appear to have been made. He has, however, recorded his results as a basis for comparison with other racial types in the future. It was found to vary from 158.5 mm. to 144 mm. in the male crania, with an average of 151.8 mm. and from 152 mm. to 127 mm. in the female skulls with an average of 141.7 mm. It was therefore evident that the usual racial range of variation manifested itself in regard to the measurements of this chord."

25: Cameron--49 [3] (1913-18) 1923 Copper Eskimo
116, 141

"The Lambda-Inion Chord

This chord varied between 80 mm. and 63 mm. in the male crania with an average of 69.4; and from 75 mm. to 55 mm. in the female series, with an average of 62. The results for the males were well above the European average of 63 mm., as given by Büchner, (3) and markedly above the averages for aboriginal Australian and Tasmanian

3. Buchner, L. W. G. A Study of the Aboriginal Tasmanian Cranium. Proceedings of the Royal Society of Edinburgh, Vol. 34, 1913-1914.

crania as given by the same observer (55.2 and 55.5 mm.). The average for the Neanderthal type of skull is 54 mm. (16) This chord in Pithecanthropus measured 42 mm. (13)

16. Schwalbe, G. Der Neanderthalschädel. Bonner Jahrbücher, Heft 106, 1901.

13. Klaatsch, H. Die Fortschritte der Lehre von den fossilen Knochenresten des Menschen in den Jahren 1900-1903. Ergebnisse der Anatomie und Entwickelungsgeschichte, Vol. 12, 1903."

"The Horizontal Cranial Circumference

This was measured over the glabella and the occipital point, as recommended by Turner. (18) It fluctuated between 551 and 505 mm. in the male crania, with an average

18. Turner, Sir William. Report on the Bones of the Human Skeleton. Challenger Reports, Vol. 16, Part 47. London, 1886.

of 524 mm.; and from 519 to 461 mm. in the female series, with an average of 492 mm. The average for the male skulls practically accorded with that (525 mm.) for the average European type of skull, also with the measurements for the male and female Eskimo crania 528 and 500 mm. in the R.C.S. Museum, (11) and even with the

11. Flower, Sir William. Catalogue of the Royal College of Surgeon's Museum, 2nd Edition. London, 1907.

corresponding dimensions of two low grade Melanesian skulls (520 mm. and 534 mm.), (4) As previously stated by the writer, (5) there is a very slight inter-racial range of

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Institute of Science, Vol. 14, Part4, Halifax

1918.

5. Cameron, J. A Craniometric Study of the Micmac Skull in the Provincial Museum of Nova Scotia. Transactions of the Nova Scotia Institute of Science, Vol. 15, Part 1, Halifax, 1919.

variation in this cranial measurement, even between the highest and lowest types of modern man, and on that account it would appear to lack significance. On the other hand, however, it emphasises the necessity for an expansion of the cranial roof in the higher races of mankind, in order to provide more accommodation for its cerebral contents that would prove commensurate with the more elaborate degree of evolution of the brain in these racial groups."

"The Naso-Orbito-Alveolar Index

The writer applied his recently devised naso-orbito-alveolar craniometric method (7)

7. Cameron, J. A New Craniometric Method. American Journal of Physical Anthropology, Vol. 3, No. 1, Menasha, Wisconsin, 1920.

to these skulls, and at the same time compared the results with those found in three other types of crania, as exhibited in Plate 1, where it may be noted that in the European, Eskimo and North American Indian types the height of each of the uppermost rectangles is greater than that of the two lower ones, which are approximately equal in height. These three crania thus conform to the writer's Eurasiatic type. In the Melanesian skull, on the other hand, the upper two rectangles are nearly equal in height, and are, moreover, approximately squares, while the lowest rectangle is excessively reduced in height owing to the extreme degree of prognathism of this cranium, which thus conformed to the writer's Negro type of naso-orbito-alveolar index. Moreover, the height of the upper horizontal dotted areas of the European, Eskimo and North American Indian crania is greater than those of the lower two, which are approximately equal in height. In the Negro type of skull, on the other hand, the two upper horizontal areas of the facial skeleton are seen to be approximately equal in height, while the vertical dimension of the lowest area is extremely reduced. The results of the measurements of

the various rectangles concerned in this index are given in the subjoined table.

In the following table there are four columns. The one to the left shows the relation of the width to the height of the whole rectangle (see Plates 6 and 7, Cat. No.'s XIV, H 4 and XIV, H 5). The other three columns give the corresponding results for the upper, middle and lower rectangles.

It will be observed that the results are slightly different in the two sexes, the average indices for all four columns being consistently higher in the female. It will be interesting to find if these results are upheld in a larger series of crania. [51] There was a marked reduction in the height of the lowermost rectangle in crania D-3 and F-31, and these vitiated the results to a considerable degree in the male and female series respectively. Otherwise the average for this rectangle would have been nearer 100. In a previous paper the author has pointed out that the middle and lowermost rectangles are approximately squares in the Eurasiatic type of cranium; that is to say, their indices are in the vicinity of 100. It will be noted from the table that the averages for these two rectangles in the present series of Eskimo skulls support this assertion.

Male crania	Whole rectangle	Upper rectangle	Middle rectangle	Lower rectangle
H- 4	25·0	62·7	81·8	81·8
H- 6	27·7	67·5	83·3	108·6
D- 3	36·2	86·0	100·0	100·8
F- 1	32·3	77·2	108·0	121·4
F- 2	34·4	75·6	129·1	124·0
F- 3	28·3	68·1	96·9	107·1
F-22	22·4	60·4	92·8	100·0
F-33A	29·1	71·4	93·7	103·4
Averages	29·4	71·1	97·5	113·1

Female crania	Whole rectangle	Upper rectangle	Middle rectangle	Lower rectangle
H-5	26·5	66·6	78·7	92·8
D-1	29·5	76·2	87·8	116·0
D-6	28·8	70·0	96·5	100·0
F-16	33·0	71·4	107·1	100·0
F-18	28·3	62·5	90·9	115·3
F-30	32·3	71·3	106·4	122·0
F-21	31·6	72·0	106·8	114·8
F-22	32·9	75·6	103·3	134·7
F-25	30·7	80·0	84·8	107·4
F-31	36·7	79·5	134·7	182·3
F-33B	34·5	85·2	120·8	96·6
F-33C	31·0	84·3	96·4	103·8
F-33D	28·3	66·1	88·2	111·1
Averages	31·2	74·0	100·0	115·8

(1913-18) 1923

Copper Eskimo

"THE EVOLUTION OF THE ESKIMO TYPE OF SKULL

It is evident from the foregoing description that if the Eskimo is really Mongoloid in origin, which would bring him into relation with the Mongols of Asia, the Polynesians of the Pacific Ocean and the aboriginal Indians of the Western Hemisphere, then his skull exhibits at the present day some profound alterations from the generalised Mongolian type. Take first of all his contracted nasal aperture, which is perhaps his most important cranial specialisation, since it places the Eskimo skull in a category by itself. It will probably be granted by most observers that this modification can be explained by his climatic environment. The inhaling for prolonged periods of cold air, frequently registering many degrees below zero, would most assuredly compel nature to design and provide as narrow as aperture as possible, so as to reduce the chilling effect of this intensely low temperature to a minimum."

25: Cameron--51 [2] (1913-18) 1923 Copper Eskimo
116, 141

"Now, in reference to the dolichocephalic Eskimo skull, I do not personally consider that this has much significance when contrasted with the brachycephaly of the Mongol, for it is a well recognized fact that the cephalic index has quite an extensive range of variation, even in members of the same race. For example the average type of Scottish skull approximates to the dolichocephalic type, and yet Sir Wm. Turner found that 35 out of a series of 174 skulls collected from various parts of Scotland exhibited well-marked brachycephaly (17).

17. Turner, Sir William. A Contribution to the Craniology of the People of Scotland. Transactions of the Royal Society of Edinburgh, Vol. 41, Part 3, 1903."

"The post-orbital construction in these Eskimo skulls is so marked that it deserves some comment. It has been already remarked that the temporal muscles must have been powerfully developed, judging from the extreme depth of the lower parts of the temporal fossae of these skulls. It seems to the writer that these strongly acting muscles might possibly have had a constricting effect upon this portion of the cranium, and thus diminished its post-orbital diameter. This conclusion is strengthened by a comparative study of the crania of some lower mammalia. In the gorilla, for example, the temporal muscles are huge, and meet in a sagittal crest on the cranial vertex. Their constricting effect is shown by the marked reduction of the post-orbital diameter, and of course by a pronounced lowering of the fronto-parietal index. This post-orbital constriction is, moreover, a striking feature of the crania of carnivora, the fronto-parietal index for the lion skull in the Nova Scotia Provincial Museum being found by the writer to be as low as 53, which meant that the post-orbital constriction was reduced to nearly one half of the maximum parietal breadth. On studying the conditions in modern Hominidae the author finds that the fronto-parietal index is usually above 80 in the Anglo-Saxon type of cranium, due of course to the fact that the skull has been compelled to adapt itself to the lateral expansion of the frontal lobes of the brain in these higher races. On the other hand he found this index as low as 72.6 in a Melanesian skull (4); while Duckworth

4. Cameron, J. Two Remarkable Skulls from the New Hebrides. Transactions of the Novia Scotia Insititute of Science, Vol. 14, Part 4, Halifax, 1918.

(10) gives the average index for the aboriginal Australian cranium as 77. There can be

10. Duckworth, L. W. H. Morphology and Anthropology. Cambridge, 1904.

no doubt that these lowly evolved types of modern man indulge in a very vigorous and unconventional type of mastication; thus encouraging their powerful temporal muscles to exert this constricting effect upon their skulls, and therefore lower their fronto-parietal indices. Note further, that [52] the staple dietary of the Eskimo consists of raw or only imperfectly cooked food, so that their type of mastication must likewise be not only excessively vigorous, but also excessively unconventional. From the foregoing remarks it has become increasingly evident that the traction of the muscles of mastication on the lateral aspects of the cranium must exert a far-reaching influence upon its modelling and configuration--an effect which is probably not yet fully appreciated. The author would therefore like to put forward the theory that the type of mastication adopted by the Eskimo in negotiating his tough food has contributed, in no small measure, its effect in

producing his characteristic type of cranium. This decision will however have to be confirmed by the examination of a much more extensive series of Eskimo crania, and this will require to be undertaken in the future, when the necessary facilities are obtainable. For this purpose the author would indeed be most grateful for the loan or presentation of crania belonging to this most interesting race."

25: Cameron--54 (1913-18) 1923 Copper Eskimo
116, 141

"Mandibles

One of the first features that impressed the writer was the general massiveness of these Eskimo mandibles.

All the muscle markings were most pronounced, thus providing a suggestive reminder of the masticatory vigour of these individuals. Only in a few instances had the teeth been missing at death, for the alveoli as a rule were deep and their walls healthy. The angles were markedly everted. Indeed, this eversion had in many cases involved also the lower halves of the rami, thus imparting a very broadened appearance to the jowls (Fig. 2). The writer was much surprised at the obtuseness of the angles, considering that none of the individuals represented ages much above middle life. For example the sizes varied from 128° to 122° in the adult males and from 130° to 121° in the adult females. Thus none of them approximated to 90°. The intergonial width was remarkably high, ranging from 128 mm. to 115. 5 mm. in the adult males and from 114. 5 mm. to 101. 3 mm. in the adult females. These high figures were of course a natural result of the eversion of the angles. The highest intergonial measurement the writer could make in a collection of male European mandibles proved to be 111.3 mm. and this was well below the minimum for the male Eskimo series, as noted above."

25: Cameron--54 [2] (1913-18) 1923 Copper Eskimo
116, 141

"One of the striking features of these Eskimo mandibles was the marked lowering of the posterior ends of the alveolar borders. This was most pronounced when viewed from the side (Fig. 3). For example, in one adult male mandible the height at the symphysis was 47 mm. and this rapidly diminished in a posterior direction, until opposite the third molar tooth it was only 32.5 mm., representing a reduction of 31 per cent. This remarkable condition suggested to the author a new index for the mandible to which he has applied the term 'the index of height of the mandible in the molar region.' The height in front is measured from the ridge between the alveoli of the central incisor teeth to the lower border of the symphysis. The height posteriorly is taken from the inner edge of the alveolus of the third molar tooth to the lower border of the mandible. This measurement was always made on both right and left sides in these Eskimo mandibles, for it was ascertained that in only three cases did these heights agree on both sides. In the others there was always a slight difference, and in these, interestingly enough, the lowering was on the right side, except in two cases where it was on the left. This suggested of course that these Eskimos were accustomed to masticate more on the right side than on the left."

25: Cameron--54 [3] (1913-18) 1923 Copper Eskimo
116, 141

"This new index was obtained by multiplying the height at the third molar tooth by one hundred and dividing by the height at the symphysis. The result of course represented the percentage height of the molar region. This proved a profitable investigation, for it produced not only interesting but also consistent results. For example it was found that the index progressively diminished with age. This fact furnished an interesting side light on the masticatory habits of the Eskimo, for it demonstrated that the terrific pressure to which the teeth were subjected forced the lower molar series more and more downwards during the period between adolesence and middle life."

"On making a close analysis of this new index it was noted that the highest figure, namely 91.4, was recorded in the mandible of a young adolescent female. The minimum (62.1) was found in the mandible of an adult female. The writer compared these results with the corresponding indices for ten European mandibles, where the maximum was 94.1 and the minimum 76.1, showing of course that the masticatory activity, and therefore the downward pressure upon the lower molar series, were not nearly so evident in these types of mankind.

This forcing downwards of the molar sockets produced an excessive broadening of the posterior portions of these Eskimo mandibles. Thus the distance between the inner border of the alveolus of the third molar tooth to the point [55] on the external surface where the anterior border of the ramus joins the body was as much as 21.5 mm. in one adult male mandible, while the minimum (14.5 mm.) was found in an adolescent female. The corresponding maximum in a series of European mandibles was 18 mm. The general effect produced was to cause the sockets of the molar series to overhang the inner aspects of the mandibles to a pronounced degree. This feature of the Eskimo mandible has been already emphasized by Hrdlicka. (12) Indeed in some instances the bony thickening was

12. Hrdlicka, A. Contribution to the Anthropology of the Central and Smith Sound Eskimos. Anthropological Papers of the American Museum of

Natural History, Vol. V, Part II, New York, 1910.

excessive. For example, in mandible XIV H-8 the inward bulging of the bone was so marked that the transverse distance between the inner surfaces of the body opposite the first molars was reduced to 21.5 mm. This jaw had therefore an extraordinary appearance when viewed from below (see Fig. 5). The writer would regard these bulgings as bone buttresses built up by nature to resist the excessive strain thrown upon the alveoli of the molar teeth. He exhibited the mandibles to Prof. H.E. Friesell, Dean of the Dental Faculty, University of Pittsburg, and this authority concurred in the opinion expressed above."

25: Cameron--55 (1913-18) 1923 Copper Eskimo
116, 141

"The writer has made a routine practice in his anatomy course of referring to a faint groove for the lingual nerve on the inner aspect of the mandible immediately below the last molar tooth, and has always expressed surprise that this is not described in standard textbooks of anatomy. These Eskimo mandibles all exhibited this important groove, which, indeed, was present in some cases to a pronounced degree. He would, therefore, put forward a plea for a fuller recognition of the clinical importance of this groove, seeing that there exists by no means a remote possibility of the lingual nerve being lacerated in a clumsy extraction of the third molar tooth."

"The rami, in conformity with the bodies of the mandibles, were very massively developed and exhibited strong muscle markings. The author decided to experiment with a new index for the ramus to be termed 'the index of width of the ramus.' To obtain this the width was multiplied by 100 and divided by the height. The length was measured from the bottom of the sigmoid notch to the lower border of the ramus in a direction parallel to the anterior and posterior borders. The width was measured from the centre of the slightly concavity in the anterior border below the coronoid process and at right angles to the borders. The lines representing the length and width of each ramus thus intersected at right angles. It was found that the measurements varied for the right and left rami of each mandible except in one case. Thus in half the cases the right ramus was the wider, while in the others the left exhibited the greater relative width, suggesting varying masticatory habits of these individuals. The index of course indicated the proportion which the width of the ramus bore to its length. It was found to vary from 93.02 to 68.6, and, moreover, exhibited one consistent feature, namely--it increased with age in both sexes, up to middle life at any rate. There were no aged mandibles to illustrate the condition of the index in late life. The interpretation of these results obfiously was, that the width of the Eskimo ramus increased with age in both sexes up to middle life. On studying this index in ten adult Anglo-Saxon mandibles, the maximum and minimum

figures were 67.8 and 52.3, which were much below the Eskimo averages, thus demonstrating that the Eskimo ramus was relatively much wider than the Anglo-Saxon. On studying this matter further in European types of mandible, it was ascertained that the index of width of the ramus increased with age so long as the teeth remained intact, and then diminished again if the individual became edentulous. Altogether this comparative study of these Eskimo mandibles provided some gratifying and suggestive results.

The mandibular condyles were so placed that their long axes converged upon the centre of the anterior edge of the foramen magnum as in the European type. Their articular surfaces were, however, slightly flatter in conformation with the more shallow character of the Eskimo glenoid fossae."

25: Cameron--56 (1913-18) 1923 Copper Eskimo
116, 141

"The Scapula

"There was only one scapula in a sufficient state of repair for the estimation of its index. This proved to be 72.4. Duckworth (10) gives an average scapular index of 61

10. Duckworth, L. W. H. Morphology and Anthropology. Cambridge, 1904.

for the Eskimo, so that it is evident there is a wide range of racial variation. The same observer gives 65.3 as the average European scapular index. The writer (19) found

19. Cameron, J. Tomb of Two Brothers, Report on the Anatomy of the Mummies. Manchester University Museum Handbook No. 68, 1910.

indices of 69.1 and 71.2 in the scapulae of two ancient Egyptian princes of the XIIth Dynasty. It may be noted that the higher the index, the more simian is the scapula."

"The Humerus

The writer found perforation of the olecranon fossa in one out of ten adult humeri. These exhibited no trace of a supracondyloid process.

The Innominate Bone

There were only two innominate bones (XIV D-7 and XIV F-1) sufficiently intact to permit of the estimation of their indices. These were 76.2 and 74, with an average of 75.1. Duckworth (10) gives indices 87 and 89 for two Eskimo skeletons, so that we

10. Duckworth, L. W. H. Morphology and Anthropology. Cambridge, 1904.

recognize once more an extensive range of racial variation for this index. In white races it was found to vary from 74.5 to 79.1. The lower the index, the more simian is the type of innominate bone."

"The Femur

All the femora, without exception, exhibited the forwardly directed convexity of their shafts associated with the characteristic pilastered condition of the linea aspera, which is so prevalent in races that habitually squat. The neck of the femur was relatively short in comparison with the Anglo-Saxon type, but joined the shaft at about the same angle. In four out of six cases the squatting facet was present on the anterior aspect of the femoral neck.

The stature was estimated from the lengths of the femora, using the proportion .275 as given by Thane, (1) and was found to vary from 161.2 cm. in a male to 140.3 cm. in a

1. Berry, J.A., and Robertson, A.W.D. The Place in Nature of the Tasmanian Aboriginal. Proceedings of the Royal Society of Edinburgh, Vols. 31 and 34, 1910 and 1913.

female. The average stature for the Eskimo male is given as 162.1 cm. by Deniker. (2)

2. Brierley, J., and Parsons, F.G. Notes on a Collection of Ancient Eskimo Skulls. Journal of the Royal Anthropological Institute, Vol. XXXVI, London, 1906.

The index of platymeria was taken on the bone at the level where the buttress descending from the small trochanter fades away on the posterior aspect of the shaft. The index varied from 101.6 to 80.9, so that practically no tendency to flattening of the shaft of the femur existed in these skeletons."

"The Tibia

The upper ends exhibited varying degrees of retroversion, as found in races that habitually squat; but this was not nearly so pronounced as in two skeletons from Ancient Egypt described by the writer. (19) Moreover, there were no squatting facets on the

19. Cameron, J. Tomb of Two Brothers, Report on the Anatomy of the Mummies. Manchester University Museum Handbook No. 68, 1910.

lower ends of the tibiae, nor on the necks of the astragali. This provides us with a hint as to the exact squatting posture adopted by the individual, for it is evident that the Eskimos squatted with their buttocks still resting on the ground, while in the East we find the more extreme degree where the buttocks rest upon the heels. The latter is therefore associated with the most extreme condition of flexion of the hip, knee and ankle joints, thus producing facets on the neck of the femur, the lower end of the tibia and the neck of the astragalus, together with marked retroversion of the upper end of the tibia, a pilastered femur and platycnemia of the tibial shaft."

116, 141

"The index of platycnemia of these Eskimo tibiae varied from 76.4 to 65.6. These were well below the European average of 88.2, (10) but did not represent the extreme degree of platycnemia displayed by the two ancient Egyptian skeletons referred to above, where the indices were as low as 57.5 and 56.2."

25: Cameron--57 (1913-18) 1923 Copper Eskimo
116, 141

"The Intermembral Index

Owing to the wholesale destruction of the limb bones by wild animals, this index could be estimated in only two (male) skeletons. For these the figures were 70.6 and 70.2, which were in the vicinity of the Eskimo average of 73.4 given by Duckworth (10) (for

10. Duckworth, L. W. H. Morphology and Anthropology. Cambridge, 1904.

two skeletons). It may be observed that this index is always over 100 in the anthropoid apes, owing to the greater length of the upper limb in these animal types. In man, however, owing to the preponderating length of the lower limbs, the index falls considerably below 100, and it is interesting to note that in modern Hominidae (with the exception of the Bambute pygmies) the index shows a very slight inter-racial variation, being closely in the vicinity of 70."

"The Radio-Humeral Index

This index was 68.03 and 74.02 in the two Eskimo skeletons. The race is usually in the brachy-kerkic group of Turner (18) with an index under 75, so that the two above

18. Turner, Sir William. Report on the Bones of the Human Skeleton. Challenger Reports, Vol. 16, Part 47. London 1886.

examples conform to this grouping, which also includes the European type. The index, of course, demonstrated that the radius is relatively short in the Eskimo, and this places him in the group furthest away from the simian type. The writer (19) found radio-humeral

19. Cameron, J. Tomb of Two Brothers, Report on the Anatomy of the Mummies. Manchester University Museum Handbook No. 68, 1910.

indices of 78.6 and 81.3 in two ancient Egyptian male skeletons."

25: Cameron--57 [3] (1913-18) 1923 Copper Eskimo
116, 141

"The Tibio-Femoral Index

This was 80.7 and 81.8 in these two skeletons. The indices were thus below 83, and placed them in the brachycnemic category in which Eskimos are usually grouped with Europeans and most of the yellow races. Tibio-femoral indices of 83.4 and 82.7 were recorded by the writer (19) in two ancient Egyptian skeletons, which therefore closely

19. Cameron, J. Tomb of Two Brothers, Report on the Anatomy of the Mummies. Manchester University Museum Handbook No. 68, 1910.

approximated to the above figures."

"The Humero-Femoral Index

This was 75.9 and 73.4 in the two cases. These are decidedly below the Eskimo average of 77.7 given by Turner. (18) Duckworth (10) challenges Turner's assertion that

18. Turner, Sir William. Report on the Bones of the Human Skeleton. Challenger Reports, Vol. 16, Part 47. London, 1886.

10. Duckworth, L.W.H. Morphology and Anthropology. Cambridge, 1904.

the Eskimos are amongst the most simian of modern races so far as this index is concerned and these two results, scanty as they are, give support to this challenge. Humero-femoral indices of 68.8 and 71.2 were found by the writer (19) in two ancient Egyptian

19. Cameron, J. Tomb of Two Brothers, Report on the Anatomy of the Mummies. Manchester University Museum Handbook No. 68, 1910.

skeletons, which thus approximated to the Anglo-Saxon average of 71.

In concluding, the author desires to place on record his appreciation of the assistance of his Demonstrator, Dr. Gerald Grant, and of his senior students Clarence G. Campbell, B.A., and Howard A. Creighton, B.A., in the calculation of the various cranial

measurements and indices. We worked in couples and then checked our individual results so as to make the records as accurate as possible. Our task was no light one, as thousands of calculations and measurements had to be made. However, we trust that by these means the possibility of error has been reduced to a minimum.

It gave me much gratification to be able to secure the services of Dr. S. G. Ritchie and Dr. J. Stanley Bagnall, Dalhousie University Dental School, for the report upon the dentition. They had a free hand in the matter, and have assumed full responsibility for that section of the publication."

In the collection of skulls and mandibles under examination all the dentures were complete or nearly complete at death. Owing to the primitive methods of burial, with a few notable exceptions the specimens are now partially or wholly edentulous.

All the teeth peresent, regardless of condition, have been where possible, carefully measured in millimetres after the method advocated and used by the late Dr. G. V. Black of Chicago, and the measurements checked and tabulated in tables I and II. Average and greatest measurements will be found side by side for comparative purposes with similar measurements made and compiled by Dr. Black from a very large number of miscellaneous teeth collected by him.

A critical study of the teeth and jaws of the Eskimo is instructive and interesting. The dental arches are large and beautifully formed, approaching closely to the normal ideal Caucasian type as presented by Selenka and Röse.. (2) The curve of the arch is in all

2. Osborne, H.F. Evolution of Mammalian Molar Teeth. Macmillan Co., New York, 1907.

cases semi-elliptical and numerous measurements and calculations made indicate that it is almost mathematically accurate. In measuring the maxillae, a point that has hitherto, as far as I am aware, escaped notice was observed, namely--that the anterior palatine foramen is located exactly as the focus of the ellipse. The arches are broad and short,

the greatest breadth or minor axis of the ellipse being in the neighbourhood of the first and second molars, the third molars and tuberosities of the jaws lying on the inward falling, backward curve with a proportional decrease in breadth in this region. To one accustomed to the malocclusions of the civilized races the symmetry of the dental arcade in these Eskimo jaws is striking. Only the slightest trace of irregularity is in evidence in two cases--in one the canines, in the other a pre-molar being slightly out of alignment."

26: Ritchie--59 [2] (1913-18) 1923 Copper Eskimo
116, 141

"The occlusion in this race seems to be universally prosharmotic, i.e., the teeth meet edge to edge. When this condition maintains, the cusps of the premolar and molar teeth are usually short and the occlusal plane is flat or faintly curved in the antero-posterior direction. Such an arrangement permits of greatly extended forward and lateral excursions of the lower jaw as contrasted with the restricted movements of Caucasian dentitions where a more or less pronounced overbite of the upper teeth with a markedly curved occlusal plane, and length of tooth cusp developed accordingly, is the rule with few exceptions. But an edge to edge bite has far-reaching consequences; no matter in what race it is found the wear of the teeth is pronounced. In the Eskimo it reaches the extreme. Here, at middle age, the crowns of the incisors in many cases are completely worn away; the cusps of the second and third molars have disappeared; and, in the first molar and premolar region in the maxilla the entire lingual and occlusal portions of the teeth from the buccal marginal ridge to the cervical border of the lingual surface have been ground away, leaving oblique planes which meet and occlude with their counterparts in the mandible where the buccal aspect of the teeth has been removed almost to the same extent, leaving the sharp occlusal margins of the lingual enamel plates intact and highly polished flat surfaces bevelled almost to the buccal gum margin. (See Plates II, III, IV and VI, Cat. No. XIV, F. 4."

26: Ritchie--64 (1913-18) 1923 Copper Eskimo
116, 141

"Coincident with this extreme wear of the teeth the dental pulps have taken on their original function with conspicuous success. Sufficient new dentine of fine quality has been formed to obliterate the pulp chambers and in some cases even the root canals of the teeth. This new growth of tissue is found in every case where access to the pulp chambers has been threatened. There has therefore been no destruction of the pulps through infection and consequently alveolar abscesses are apparently unknown. Perhaps this is just as good a place as any to mention the fact that in all the teeth examined there is not the slightest trace of caries. Salivary calculus too, even in the oldest skulls, with one exception which will be referred to later, is entirely absent, as is also any trace of pyorrhoea, or resorption of the alveolar margins. These latter, however are thicker than those of civilized races and the blood supply is abundant."

26: Ritchie--64 [2] (1913-18) 1923 Copper Eskimo
116, 141

"An edge to edge occlusion has a further result which is conspicuous in a very large percentage of the skulls examined. This is the shallow broad glenoid fossa and the flattened eminentia articulatis which are typical of the Eskimo race. A reference to the plate will show how pronounced these characteristics are. It has been shown by eminent dental authorities (3) that the movements of the mandible during mastication are governed

3. Wilson, G. H. The Anatomy and Physics of the Temporo-Mandibular Joint. Journal of the National Dental Association, Huntington, Indiana, Vol. VII, No. 5, May, 1920; Vol. VIII, No. 3, March, 1921.

by the guiding action of the canine teeth and the inclined planes on the cusps of the premolars and molars. The varied actions of the condyles are the result of these movements and not their cause. As a corollary to this it may be said that the depth, form and extent of the glenoid fossa will vary according to the antero-posterior curvature of the occlusal plane and the extent of overbite exhibited by the anterior teeth with consequent restriction or non-restriction of movement as the case may be. In connection with this important point it might be well to point out that the anatomy text-books are undoubtedly wrong when the state that the mandible is a lever of the third class. (3)"

"By reference to tables I and II, it will be seen that the average measurements of the Eskimo teeth tend to be greater than those of the more civilized races. This is particularly true in the molar series which, unlike the civilized dentition, tends to revert to the generalized mammalian type where the molars increase in size in the antero-posterior direction. The teeth as a whole are more symmetrical and stick closer to the ideal typal forms than do those of the white races. There is in these jaws no sign of extremes in root development; nor, with the exception of the third molar, where variation is world wide, is there any indication of the fusion of molar roots spoken of by Wingate Todd (4) as common in the Eskimo. Prominence of the lingual molar roots,

4. Todd, T. Wingate. The Teeth of Primitive Man. Cleveland Medical Journal, Vol. XIV, April, 1915.

spoken of by Knowles (5) is nowhere greater than might be expected. In my opinion in

5. Knowles, F.H. S. The Glenoid Fossa in the Skull of the Eskimo. Geological Survey of Canada, Museum Bulletin No. 9, Anthropological Series No. 4, Ottawa, 1915.

individual Eskimo teeth there is far less variation from the mean than in any of the civilized races, and in this race we have the finest typal forms of teeth and the best dentitions in the world. Owing to their food habits (6, 7) I am strongly inclined to think

6. Nansen, F. Eskimo Life. London, 1893.

7. Whitney, H. Hunting with the Eskimo. New York, 1910.

that during the lapse of time not only the jaws but the teeth have been growing progressively larger."

"One or two other facts are worthy of notice. An examination of the maxillary sinuses shows that in no case is there a projection of the roots of the molars or premolars into them. It was further noted that these sinuses are extremely large, with walls so thin as to be translucent. Apart from their function as resonating chambers, with the ample blood supply and fatty tissue of the cheeks covering them, it occurred to me that they might act as reservoirs for warm air which would aid materially the mucous membranes of the nose in the process of respiration when temperatures are low."

"In the mandibles of adult individuals a pronounced reinforcement of the alveolar process on the lingual sides of the premolar teeth which gradually vanishes as the molar series is reached is to be noted. This extraordinary growth of bone tissue (in specimen F. 31 it attains a thickness of 11 mm. below the 2nd premolar), is peculiar to the Eskimo. Hrdlicka states that -- 'it is undoubtedly [65] of functional origin the result of extraordinary pressure along the line of teeth most concerned in chewing.' (8) This growth may

8. Hrdlicka, A. Contribution to the Anthropology of the Central and Smith Sound Eskimo. Anthropological Papers of the American Museum of Natural History, Vol. V, Part II. Washington, 1910. (Quoted by Knowles, vide supra, p. 10

be clearly seen in Plates IV and V. Hrdlicka advances no facts in support of his statement and consequently one may consider it as merely a plausible guess. While it may seem like temerity to take issue with so great an authority, nevertheless for several reasons, chiefly dynamical, I believe he is wrong. In the first place pressure on the teeth is met and counteracted, not by the sockets of the teeth, but by the resiliency of the tangential and other fibres of the peridental membrane. (1) Only indirectly are the

1. Black, G. V. Dental Anatomy. S. S. White Co., Philadelphia, 1902.

alveoli concerned. In the second place the pressure is greatest at and near its point of application, viz., on the molar series, and it is here that the reinforcement is either slight or wanting. In this region, too, in the maxilla, the roots of the teeth are in close relation to the floor of the antrum and there is no trace of thickening of that structure to withstand the pressure."

26: Ritchie--65 (1913-18) 1923 Copper Eskimo
116, 141

"In the premolar region where the bone development is greatest, if it be argued that the growth is due to inward lateral pressure on the teeth, then since, the pressure is equal and outward on the corresponding teeth of the maxilla, one would naturally expect a corresponding reinforcement on the buccal surface of the alveolus above these teeth; but such is not the case.

A critical study of the mandibles--all of adult age--where the alveolar reinforcement occurs, shows that not only the angles but the horizontal rami are strongly everted, the lower margin of each jaw forming a very symmetrical parabolic curve. The alveolar ridge of the horizontal rami consequently lies markedly to the lingual of the lower margins so that the teeth are suspended by means of the alveolar process within the jaw, whereas ordinarily they would be placed directly upon it. In other words, owing to the strained form of the mandible, from necessity the alveolar process has altered its position. It is no longer possible to arrange it and the teeth over the jaw proper without increasing the size of the arch to such an extent as to throw it out of proportion with the rest of the face (Plate IV, Cat. No. XIV, H 4)."

26: Ritchie--65 [2] (1913-18) 1923 Copper Eskimo
116, 141

"With the beginning of eversion as a result of enormous development in the muscles of mastication concerned, the dynamics of the mandible have changed from normal. After studying the forces involved and their mode of action I have come to the conclusion that when the jaws are forcibly closed the horizontal rami are under a tortional stress which tends to evert the lower and invert the upper margin of the bone. This effect is greatest in the premolar region and since the alveolar ridge is weakened by the sockets of the teeth a compensatory growth of bone is provided on the lingual alveolar wall in an effort to counteract the action of the powerful muscles involved. Plate IV shows very beautifully the changed relations from the ordinary that exist between the molar teeth, the coronoid process and the angle of the jaw. The thickness of the bone in the bicuspid region should be noted--on the right side is 18. 3 mm. while the lingual space between the rami at the same point is only 18. 5 mm."

26: Ritchie--65 [3] (1913-18) 1923 Copper Eskimo
116, 141

"There are other points of interest in the Eskimo dentition. The lower second molar frequently carries five cusps and the third molar is occasionally so inverted that the upper half of the buccal surface occludes with the upper teeth. Variation, too, is not entirely absent in the Eskimo. Frequently the third molars vary appreciably in size on the two sides of the mouth, and in one case (F-1) the upper lateral incisors are congenitally absent. In this skull, too, the teeth are plentifully coated with tartar, probably due to disuse owing to an osteitis of the temporo-mandibular joints (see drawing of the glenoid fossae).

F-19 is the mandible of a child, probably between five and six years of age. A close examination seems to indicate that the permanent teeth erupt rather earlier than is the case in the civilized races, where more extended observations have been possible."

According to Professor Todd (4) in the maxilla, 'the distance between the outer

4. Todd, T. Wingate. The Teeth of Primitive Man. Cleveland Medical Journal, Vol. XIV, April, 1915.

borders of the second molar teeth in the English race averages 58 mm.; the length measured from a point between the upper central incisors to midway between the posterior borders of the third molars is 54 mm.; the area of the hard palate is about 2,600 sq. mm. The lower dental arcade has a length of 53 mm., a breadth between the outer borders of the third molars of 68 mm., and an area of 2,700 sq. mm.' In the Eskimo the average breadth across the molars in twenty-two maxillae measured, was 62.8 mm., the greatest measurement being 68.8 mm. The length of palate to the borders of the third molars, in nine specimens, averaged 44.3 mm.; the greatest being 53 mm., and the least 32 mm. In nine mandibles measured, the breadth at the third molars averaged 65 mm. and the length 51 mm. The areas mentioned by Todd may easily be calculated from the figures given and the area formula of the ellipse.

My thanks are due to Dr. J. Stanley Bagnall for his assistance in making measurements and compiling tables I and II, and in the taking of casts of the glenoid fossae."

2: Stefansson--233 (1908-12) 1914 Copper Eskimo
142, 117

"Complexion. The complexion is a good deal darker than our two men, who have been much outdoors, though the ice may sunburn more than the shore. Some are as dark as half-blood negroes.

Hands. The hands are typically Eskimo in general, but one woman (twenty-five or thirty years, approximately) has the long fingers that I have seen only in half-bloods. She has no other marked non-Eskimo characters."

"1. IGLISIQ, 45 years (Plate II).
Hair: black, almost straight, cut close on crown, but falling to shoulders on sides; eyebrows: black and medium thick; moustache and beard: black, short and sparse.
Forehead: medium high and slightly receding.
Eyes: dark brown; traces of fold, slits medium wide, lids slightly concealed.
Nose: bridge low, leading stright to tip.
Lips: thick and everted, the lower more than the upper."

7: Jenness--38B (1914-16) 1923 Copper Eskimo
116, 142

"The inhabitants of this region, the Copper Eskimos, are of about the middle stature, and sturdy and robust in build. The fur clothing in which they are habitually enveloped gives them an exaggerated appearance of corpulence, whereas in reality they incline towards slenderness, the body tapering a little below the broad shoulders (1). Many of the children, however, and a very few of the adults, are distinctly pot-bellied, and no markedly thin person was seen by the expedition, while, on the other hand, two women were found to measure each as much as 14 inches around the forearm. The average weight seems to be greater than that of Europeans; eleven men averaged 164 lbs. (deducting 8 lbs. for the weight of the clothing) and five women 167 lbs."

"1. This seems characteristic of all Eskimos; cf. for Greenland, Holm, Meddelelser om Grønland, Vol. XXXIX, p. 27, and for Point Barrow, Simpson, Arctic Papers for the Expedition of 1875, London, 1875, p. 238."

7: Jenness--B39 (1914-16) 1923 Copper Eskimo
116, 142, 515

"The general appearance of these Eskimos varies a great deal according to the season of the year. In summer, when they wear their oldest clothes and wander day after day over dusty plains or muddy swamps, their faces become encrusted with a constant layer of dirt. Washing is unknown, and while a party occasionally bathes in a stream or lake on a very hot day, these occasions are few and far between. The skin, too, becomes very much tanned at this season, so that altogether the appearance of the natives is not prepossessing. But in winter, when they wear new fur clothing, and contact with the snow removes the dirt from their faces at the same time as the tan disappears, their appearance is so changed that one could almost imagine them a different people."

7: Jenness--B39 (1914-16) 1923 Copper Eskimo
116, 142

"The colour of the skin, where it is untanned by exposure, is a trifle darker than that of a North European. Mr. Wilkins, the photographer of the expedition, stated that in the neighbourhood of Minto inlet he saw a girl whose skin was quite as white as that of any European he had ever seen; but this was certainly exceptional. I frequently compared the colour of their upper arms with my own, and invariably found that mine was a little lighter. In spring and summer the Eskimos tan to a darker brown than we do, but in the long hours of winter twilight and darkness the skin resumes its normal colour. No sexual difference was noticed, although Holm states that Ammassalik women are lighter than the men. A very few individuals are marked with freckles.

There seems to be quite a distinctive odour exuded from their skin different from that of white people. An old woman once asked me whether I had noticed an objectionable odour about them when I first arrived in their country. I stated that all our party had noticed it, and she answered 'That is not strange, for we noticed the same thing about you.' Caribou-skin clothing has always a very strong odour, but the personal odour of the Eskimos seemed quite distinct from that."

7: Jenness--B39-40B (1914-16) 1923 Copper Eskimo
116, 142

"The hair of the head is generally abundant and remains black until very late in life. One man still in his prime was almost bald, and his little son of about 10 years was partly bald; but neither baldness nor grey hair are common. In many cases the hair seems to begin farther back on the forehead than usual, making the forehead appear higher than it really is. Holm states that the Ammassalik Eskimos of East Greenland have glossy hair.... while Simpson says that at Point Barrow in Alaska it is without gloss;.... among the Copper Eskimos it is glossy in some individuals and not in others. Its colour is almost invariably a deep black, and it fluctuates in shape between what Martin calls 'flachwellig' and 'weitwellig,' in this paper called simply 'straight' and 'wavy.'.... Straight hair predominates, but there is a slight sexual difference, wavy hair being more common in men than in women; this may be due to the women wearing their hair in braids, which would tend to make it straighter.... The percentage of variation in colour and form are shown in the following table, which is based on the lists in Section I. [40B]

HAIR OF HEAD

	Colour			Form	
	Black	Black with tinge of brown at ends	Brownish-black	Straight...	Wavy
	p. c.	p. c.	p. c.	p. c.	p. c.
Men, 82 cases.....	92. 5	2. 5	5. 0	66	34
Women, 42 cases.....	97. 5	...	2. 5	81	19

7: Jenness--40B (1914-16) 1923 Copper Eskimo
116, 142

"Bushy eyebrows are very rare. Usually they are quite sparse, and in consequence are apt to seem lighter in colour than the hair of the head, although this is seldom the case; the eye-lashes are similarly short and scanty. I have tabulated the variations in colour and quantity of the eyebrows on a percentage basis, as was done with the hair of the head.

EYEBROWS

	Colour		Form				
	Black	Brownish-black		Abundant	Medium	Sparse	Almost none
	p.c.	p.c.	cases	p.c.	p.c.	p.c.	p.c.
Men, 76 cases.....	88	12	82	13	46	38	7
Women, 36 cases.....	89	11	41	2	15	68	15

7: Jenness--B41 (1914-16) 1923 Copper Eskimo
116, 142

"Neither the moustache nor the beard develops to any extent before middle age; indeed the presence of a beard is considered a certain sign of old age, or at least of advanced years. The moustache is hardly ever thick, and the beard invariably sparse and scraggy; three inches is about its maximum length. Mr. Stefansson's statement that 'here (in Victoria island) are men with abundant three-inch-long beards'.... applies, according to my observations, only to a very few individuals found on the mainland as well as on Victoria island; and certainly Back was guilty of considerable exaggeration when he said of some Eskimos on the Great Fish river 'they could hardly have nurtured a more luxurious growth of beard, or cultivated more flowing mustachoes.'.... The cheeks are always perfectly glabrous in the younger men, but towards middle age they become sprinkled with a few stray hairs. The beard is generally concentrated on the chin, although sometimes there is a small goatee. Depilation is practised, but not in any systematic fashion. The hair in this part of the face is usually black like the hair of the head, but it often has a marked brownish tinge, noticeable more particularly in the moustache and on the lower lip; even then the hair on the chin is almost always black, so that the brownish tinge is probably due in part to bleaching, the hot blood soup that is a favourite drink of the natives being perhaps one of the agencies. It is worth noticing in this connection that the hair of the head is almost invariably black, except sometimes at the extreme tips, where bleaching is also liable to occur.

7: Jenness--B41 (1914-1916) 1923 Copper Eskimo
116, 142

"CHEEKS

The cheekbones are high and prominent, being especially noticeable when the face is thin or elongated; but when the cheeks fill out in seasons of plenty the bones are partly masked by masses of tissue."

7: Jenness--B41 (1914-16) 1923 Copper Eskimo-2
116, 142

MOUSTACHE AND BEARD

	Black	Brownish-black(3)	Brown
	p. c.	p. c.	p. c.
Men, 64 cases.....	62.5	36	1.5

"3. Under brownish-black are included all cases where the moustache is given as brown or brownish-black, but the beard as black."

"EYES

The eyes show a rather wide range of variation. In colour they are always brown, the dark shade predominating in both sexes. I received an impression that little children always had dark eyes but am unable to verify it, as detailed observations were confined to adults. It is worth calling attention to, however, since Parry received the same impression at Iglulik in Hudson Bay (1).

COLOUR OF EYES

	Dark Brown	Light Brown	Brown undefined
	p.c.	p.c.	p.c.
Men, 82 cases	55	44	1
Women, 42 cases	69	26	5

"1. Parry, op. cit., Vol. 4, p. 78."

A secondary coloration of blue or grey, mainly around the fringe of the iris but extending occasionally into the sclerotis, was noticed in 14 men and 2 women, all of whom, as the following table shows, were judged to be 35 years of age and upwards.

	-34 years	35-44 years	45-54 years	55- years
Men--				
Cases examined	36	26	14	6
Cases with blue or grey fringe	--	7	5	2
Women--				
Cases examined	18	11	10	2
Cases with blue or grey fringe	--	1	1	--

The predominant colour of the eye in these cases was always brown, in three of them a dark brown, in the other thirteen a lighter shade. In no instance was there the slightest resemblance to the blue eyes of Europeans. With regard to the distribution of the phenomenon, of the 16 natives in whom it was noticed 1 belonged to Prince Albert sound

on Victoria island, 1 to the Victoria island side and 2 to the mainland side of Dolphin and Union strait, 1 to the Victoria island side and 11 to the mainland side of Coronation gulf. It is found therefore throughout the whole of the area inhabited by the Copper Eskimos. In an earlier paper (2) I have pointed out that it occurs in Alaska also and is almost certainly pathological in origin, being in all probability the result of repeated attacks of snow-blindness."

"2. American Anthropologist, Vol. 23, No. 3, July-September, 1921, p. 259f. Dr. Boas informs me that this greyish ring around the iris is common among whites also, increasing in width with age, and that it is purely pathological."

7: Jenness--42B-B43 (1914-16) 1923 Copper Eskimo
116, 142

"The shape of the eye varies considerably. It often slants a little, though seldom as much as in Mongols. The Mongolian fold is present in most cases but not usually pronounced except in children. The slits are moderately wide, and the eyelids partly concealed beneath the eyebrows.

Nevertheless one often sees straight eyes without any folding of the upper lid over the lower or its concealment beneath the eyebrow. In fact, here as among other Eskimos, every variety of shape may be found from full Mongolian to full European. These features are brought out in the following tables of percentages. [B43]

FOLD

	Pronounced	Medium	Slight	None
	p. c.	p. c.	p. c.	p. c.
Men, 81 cases.....	21	5	63	11
Women, 39 cases.....	15	23	56	5

7: Jenness--42B-B43 (1914-16) 1923 Copper Eskimo-2
116, 142

SLITS

	Wide	Medium	Narrow
	p. c.	p. c.	p. c.
Men, 69 cases	2	62	36
Women, 37 cases	---	49	51

CONCEALMENT OF LIDS

	Complete or nearly complete	Partial	None
	p. c.	p. c.	p. c.
Men, 73 cases	49	27	23
Women, 38 cases	50	26	24

7: Jenness--B45 (1914-16) 1923 Copper Eskimo
116, 142

"GENERAL FACIAL APPEARANCE"

"The head appeared on the whole less scaphoid than I had expected. Its auricular height could not be measured owing to the lack of proper callipers. No doubt the true shape is often masked by the mass of hair, especially in the women. Yet the keel-shape is not at all uncommon, and in a few instances is remarkably pronounced. The face is usually flat and broad, but there is great variation, as among all Eskimos. Three general types seem distinguishable, though they all gradate into one another. First there is the round or slightly oval face with regular features, a rather fine nose, cheekbones not very prominent and chin rounded or but slightly pointed. This type is illustrated in plate XI. The second has a longer face and pointed chin, outstanding cheekbones, and a nose frequently aquiline. Sometimes the face is long and the chin pointed, but the jowls are broad and the general shape of the face square or rectangular; or the face may be wedge-shaped, broad above but tapering to a pointed chin below. . . . Examples are shown in plates I and VI. The third type, much rarer, is somewhat reminiscent of the negroid, for the face is very short, the nose low and flat with rather wide nostrils, the lips thick and everted and the brow rather beetling. The features most distinctive of Eskimos, however, are all retained; the high head and prominent cheekbones, the colour and shape of the hair and eyes determine the racial affinity at a

glance. This third type is illustrated in plate V. No. 55 in the tables of Section I offers another example.

This distinction into types, however, is largely subjective and will vary with different observers. They are of little importance except to stress the fact that in Coronation gulf, as elsewhere, the Eskimos do not present an absolutely uniform appearance, even where there has been no known admixture with outside peoples. A native of unusual appearance is very apt to attract notice and give rise to a passing comment such as 'he was much more like a gypsy than an Eskimo, '.... or 'remind of stocky, sunburned, but naturally fair Scandinavians.' Of course racial intermixture is often readily discernible in the features, and this external evidence can be of great value when supplemented by other characters; but the features alone are rarely a safe guide, since we have no means of estimating the extent to which they may vary in an unmixed stock."

7: Jenness--B45
116, 142, 516

(1914-16) 1923

Copper Eskimo

"HANDS AND FEET

The hands and feet are small, so that a European can seldom wear mittens and foot-gear that the Eskimos have made for themselves. Left-handed people are occasionally seen; clothing made by them can always be recognized because the stitches run from left to right instead of in the opposite direction. The wrists of the women seem more supple than those of the men; they possess, too, a greater delicacy and fineness of touch. Like many of our women, they habitually hold the little finger somewhat aloof from the ring finger. The feet are generally warm and moist. They seem often to be warped by the boots, which have a tendency to cramp the toes, especially the spring and summer water-boots."

11: Stefansson--191-192 (1908-1912) 1913 Copper Eskimo
116, 142

"But before we went to sleep, and that in spite of being drowsy, as one always is in a snug and warm camp after a cold day's march, Natkusiak and I talked for hours about the extraordinary people among whom we found ourselves. We had been told by our guide [192] that we should find the Victoria Islanders of a light complexion, with fair beards, but still we were not prepared for what we saw--we had believed what we had been told, but we had not realized it. Natkusiak kept saying, 'These are no Eskimo: they merely dress and talk and act like Eskimo.' As so it seemed to me."

11: Stefansson--194 (1908-1912) 1913 Copper Eskimo
116, 142, 302

"some of the men eradicate their beards (pull out the hairs by the roots, as many Indian tribes do also): but of those who have beards a good many have light-brown ones..."

11: Stefansson--194-195 (1908-1912) 1913 Copper Eskimo
116, 142

"Their physical characteristics as I saw them I am in the habit of summarizing as follows: Of something less than a thousand persons, ten or more have blue eyes, (no full-blooded Eskimo has a right to have blue eyes, as far as we know--his eyes should be as brown and his hair as black as those of the typical Chinaman): some of the men eradicate their beards (pull out the hairs by the roots, as many Indian tribes do also): but of those who have beards a good many have light-brown ones; no one seen has light hair of the golden Scandinavian type, but some have dark-brown and rusty-red hair, the redness being usually more pronounced on the forehead than on the back of the head, and perhaps half the entire population have eyebrows ranging from a dark brown to a light brown or nearly white. A few have curly hair."

12: Collinson--285 (1851-53) 1889 Copper Eskimo
116, 142, 515, 177, 562

"The aquiline nose and Jewish cast of countenance noticed last year was not observed this; but their features resemble the general characteristics of their race, viz., broad forehead, small eyes and flat profile, chin tapering to a point, hair coarse and black, no whiskers and but little on the upper lip or chin. The women are slightly tattooed; low of stature (one a mother being but 4 feet 3 inches high); when young not devoid of some beauty, but this, as is usual among natives where the female sex are looked upon as drudges, soon passes off; and to this I attribute in some measure the ill-success our looking-glasses had in the market. One great advantage they possessed over their brethren to the westward in our eyes, was the absence of vermin on their persons."

21: Hearne--274 (1771) 1797 Copper Eskimo
142

"The Esquimaux, who reside on this [JMR: Coppermine] river, are rather low in stature, and though thick set, are neither well made nor strong. Their complexion is a dirty copper colour, though some of the women are more fair."

22: Richardson--342-344 (1848-49) 1851 Copper Eskimo
116, 142

"The faces of the Central Eskimos are in general broadly egg-shaped, with considerable prominence of the rounded cheeks; but few or no angular projections even in the old people. The greatest breadth of the face is just below the eyes; the forehead is generally narrow and tapers upwards; and the chin conical, but not acute; most commonly the nose is broad and depressed, but it is not always [343] so formed. Both forehead and chin in general recede, so as to give a more curved profile than is usually to be observed in any variety of the Caucasian race, or among the male Chepewyans or Crees, though some of the female 'Tinnè have countenances approaching to the egg-shape. As contrasted with the other native American races, their eyes are remarkable, being narrow and more or less oblique. Their complexions approach more nearly to white than those of the neighbouring nations, and do not merit the designation of 'red,' though from exposure to weather they become dark after manhood. As the men grow old, they have more hair on the face than Red Indians, who take some pains to eradicate it, but I observed none with thick bushy beards or whiskers like those of an European who suffers them to grow. An inspection of the portraits in 'Franklin's Second Overland Journey,' and in 'Back's Great Fish River,' will show that in elderly individuals both the upper lip and chin have a tolerable show of hair, though none have the flowing beard which was productive of so much benefit to Richard Chancellor and his countrymen.

Dr. Pickering says of the Mongolian, with which in common with other ethnologists, he classes the Eskimos and the major part of the other American nations, that both sexes

have a feminine aspect; [344] that the stature of the men and women is nearly the same; and that the face of the male is preeminently beardless. These peculiarities are but faintly developed among the Central Eskimos, and the females are uniformly conspicuously shorter than the males. Most of the men are rather under the medium English size, the defect in height being, perhaps, attributable ot a disproportioned shortness of the lower extremities, though this opinion was not tested by measurements. They are broad-shouldered, and have muscular arms; so that, when sitting in their kaiyaks, they seem to be bigger men than they do when standing erect. Some individuals, however, would be considered to be both tall and stout even among Europeans, and they certainly are not the stunted race which popular opinion supposes them to be. The comparative shortness of the females is common to them and the neighbouring 'Tinnè (Hare Indians and Dog-ribe), whose women are of small stature.

In both sexes of Eskimos the hands and feet are small and well-formed, being less than those of Europeans of similar height. The boots which we purchased on the coast were seldom large enough in the feet for our people, none of whom were tall men."

22: Richardson--344-345 (1848-49) 1851 Copper Eskimo
116, 142

"[JMR: Not confined to Copper Eskimos but rather dealing only slightly with them] The Central Eskimos, when young, have countenances [345] expressive of cheerfulness, good nature, and confidence; and the females, being by no means inclined to repress their mirth, are wont to display a set of white teeth that an European belle might covet. The elderly people have features more furrowed than those we see in civilised life, as we might expect when the passions are not habitually repressed; and in some of the old men the lines of the countenance denote distrust and hatred. These ill favoured individuals were, happily, not numerous, and several of the patriarchs were communicated with had a truly benevolent aspect. The weather-beaten faces of some of the old women, gleaming with covetousness, excited by seeing in our possession wealth beyond the previous creations of their imagination, lead one to believe that the poet who sang 'Old age is dark and unlovely' had drawn his picture from a people equally hard and unsoftened by the cultivation of intellect; and I feel no surprise that Frobisher's people should have suspected the unfortunate elderly woman who fell into their hands of being a witch, while they let the young one go free."

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

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Ikpuck and Icehouse.

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

[p.42-C]

Photo by J. R. Cox 142 • 291 302 576

The People of the Twilight.

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

[p. 42-F]

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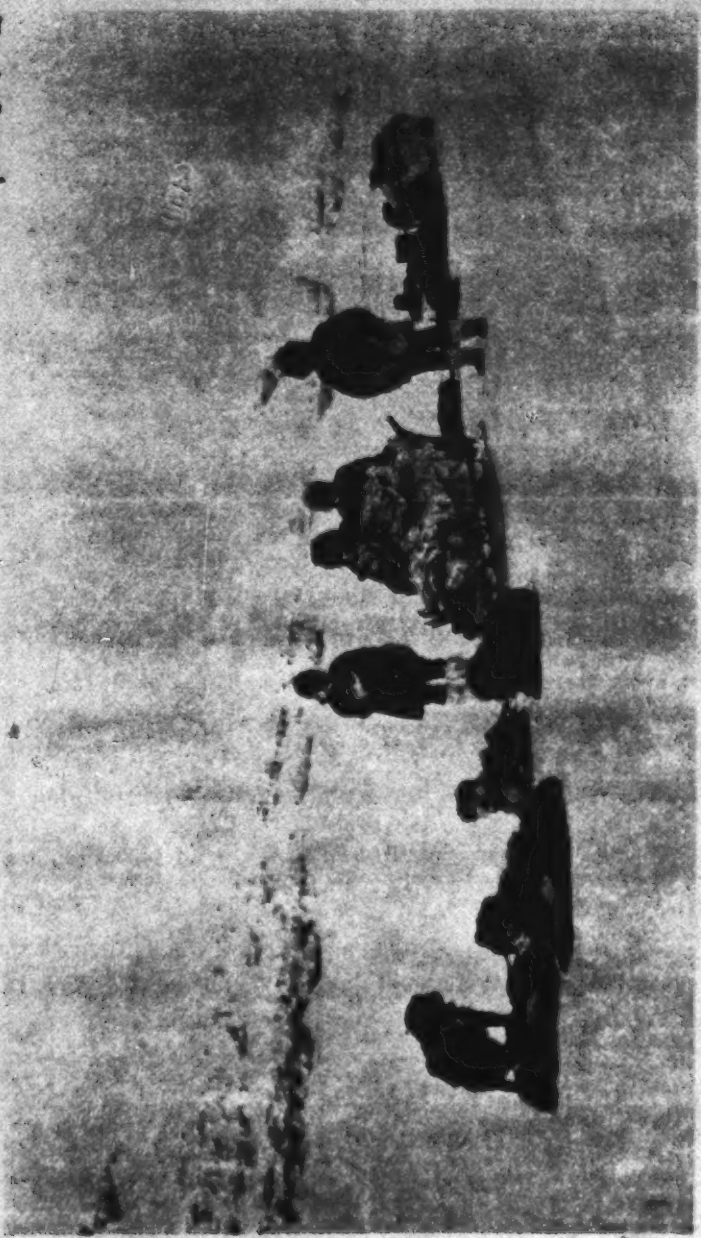

We distributed our loads in the proportion of a hundred pounds for each dog.

Photo by F. Johnson.

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

126 123 the gramophone of Captain Bernard, our predecessor in this region, because they failed to understand the white man's music; but they looked with awe on the uncanny machine that reproduced not only their words but even the ejaculations that unconsciously escaped their lips. The first man who sang into it shivered with apprehension when he heard his voice come back to him out of the horn, and asked in an anxious whisper, "Is there a spirit concealed in the box?" Nothing would induce him to sing again, and for a time I feared that this first record of their music would also be my last. But little Jennie rose to the occasion; she was too young and innocent to fear the white men who had hitherto done them no harm, and the phonograph was an exciting adventure. She sang half a dozen chants for me that evening, and made the house ring with laughter when we played them over again, and she heard the coughing that interspersed the words. Thenceforward I had no difficulty in finding singers, and we carried out of the country records of 150 songs for future study.

114 123 Palaiyak and I paid another brief visit to the island Eskimos before travelling eastward. Jennie went back with us, and we lodged in the house of Ikpuck, her step-father, because it was more convenient than a private hut that needed constant guarding. Ikpuck's wife was a comely matron, weighing something under 200 pounds, who rejoiced in the possession of two

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29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

names, Liver and Icehouse. Both seemed rather misleading; she was really neither choleric nor frigid, but a jolly, high-spirited old lady with the warmest heart imaginable, and a tongue more prone to gossip than was strictly advisable. She received us with open arms, and resigned to us half the platform in her hut, where we slept and stored all our possessions. Since her platform looked directly into the dance-house, the centre of social life, we saw everything that happened in the community, or heard it reported to our neighbours.

January was generally the coldest, darkest, and stormiest month in the year, the only month that the Eskimos really dreaded. Blizzards often confined them to their houses five days out of seven, and even if a hunter braved the storms he could find no seal-holes through the driving snow. Hunger then reigned in every hut, and the inmates shivered with cold as they extinguished their lamps one by one to conserve the oil. But the winter of 1914-15 was unusually mild. Blizzards were rare even in January, and they were separated by periods of calm weather when the hunters captured five and six seals daily. So the lamps burned brightly in all the houses and the natives were light-hearted and happy. They gaily assembled in the dance-house each evening to while away the hours with song and dance; and their medicine-men often gave weird performances, not to relieve distress, but simply to maintain their prestige and entertain their audiences.

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

wife. Their seventeen-year-old son Misty was Jennie's favourite companion; the two played at housekeeping together, snared small birds, and shot at ptarmigan with their bows and arrows. Chatterbox, a nephew of Icehouse, was a big, phlegmatic individual who abhorred quarrels and shirked the responsibility of ever taking the initiative. Himself a silent man, despite his name, his main trouble in life was to check the gossip of his wife, who outmatched Icehouse in her zeal for prying into the affairs of other people; but there was no malice in her gossip, and the two lived happily together, well liked by all their associates. Probably a physical peculiarity in Chatterbox contributed not a little to their matrimonial felicity; he was the only man in the country whose head was almost bald, and his wife was proud of his distinction. Why their seven-year-old son should be nearly as bald as his father was not easy to explain; it was certainly not due to disease, for these Eskimos had no infectious diseases.

Parted-Hair, the last hunter in our party, and the sole representative of Ikpuck's family line, was a young man who had married a woman twenty years his senior. His face was exceptionally short and flat, his nose almost swallowed up in his other features, so that even the most charitable of his countrymen could hardly call him prepossessing. Toward the children his manner was somewhat overbearing, but he always showed marked respect to his elders, especially to his

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

752
132 the day, and its light was doubled by reflection from the snow. So man, like the animals, changed his colour
142 with the season. The faces of the Eskimos during the dark days of winter had been as fair as an Englishman's; now they were tanned to the deep rich brown of a southern European. One or two appeared to be darker still, but I strongly suspected that they could be appreciably lightened by a liberal application of soap and water.

372 Ikpuck and I conveyed his blubber pokes to a small
417 island three miles off the coast, where we covered them with boulders to protect them from sea-gulls and foxes. The sea-gulls were easily deterred, but only a well-built cache could keep out the foxes, which worm their way into the smallest crevices. Before open water cut off communication with the shore, however, all animals would leave the island, and nothing could disturb our pokes throughout the summer.

225 Continual sealing began to pall on the Eskimos when the safe disposition of their blubber removed the last
132 excuse for lingering on the sea-ice. The long winter had come to an end, and the midnight sun was shining over their heads. They forgot the monotonous hours of confinement within the dimly lighted huts, when the blizzards raged outdoors and the twilight of noon resembled night rather than day. The earth was
136 awakening to life again after its long sleep. Ducks
137 and loons flew overhead, the ptarmigan in the valleys

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

137

Photo by J. J. O'Neill.

The caribou, or reindeer, is the camel of the Arctic.

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Photo by G. H. Wilkins.

The men amused themselves at archery.

[p. 128-C]

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

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Photo by G. H. Wilkins.

Dance-songs were their chronicles of current events.

[p. 128-D]

29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

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Hungry children gathered round our tent.

Photo by J. R. Cox.

She carried it everywhere on her back.

[P. 128-E]

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Every morning at daybreak the hunters departed for the sealing-grounds.

[p. 128-f]

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29: Jenness E-5 (1914-1916) 1959
ND8 Copper Eskimo ND8

Weighted down with heavy packs, stumbling over a trackless land to a new fishing-lake in the hope of breaking their fast before another sleep.

[H-828-1]